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SCHOOL WORK

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SCHOOL WORK

PART I. CONTROL AND TEACHING.

Jarrolds' Teachers' and Pupil Teachers' Series

SCHOOL WORK.

Part I. Control and Teaching

Part II. Organization and Principles of Education.

BY

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WITH REVISIONS, ADDITIONS, & COPIOUS INDEX BY

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PREFACE.

In "*School Work*" the author has attempted to supply what seemed to be a want in works dealing with Teaching and School Management. The book is intended to form not only a text-book and guide for Teachers, Students, and Pupil-Teachers in their ordinary school duties and when preparing for their respective examinations, but also for those Teachers who present themselves in the subjects of School Management and Science of Education at the London University and College of Preceptors.

It is divided into two parts—Part I. embracing *Control* and *Teaching*; Part II. *Organization* and *Principles of Education*. Part I. is essentially practical, and follows the general plan of the author's small work on "School Method." It deals, however, with several matters in a fuller and more comprehensive manner, and contains subjects not treated of in that work. Part II. is more theoretical, and deals with subjects not generally found in elementary treatises on School Management. The chapters on the "Principles of Education" are based on an exposition of Mental Science, which, it is hoped, may serve as a sound introduction to more elaborate treatises on Psychology.

"*School Work*" was left at the author's death in manuscript ready for the press, with a request that his friend, Mr. G. E. Buckle, Lecturer on School Management in the Borough Road Training College, would read through the proofs, and make those alterations in the matter rendered necessary by the latest Departmental regulations. The book embodies the results of a long experience, and contains the subject matter of lectures delivered to students by the author while holding the positions of Normal Master at the Borough Road Training College, and Superintendent of the Central Training Institution, Melbourne. It has been the work of several years; every part of it having been carefully thought out, and the greater portion revised and re-written again and again. It is hoped the anticipations of the author will be realized, and the volume prove a useful text-book, especially to those entering on the arduous but honourable profession of School Teaching.

MELBOURNE, 1885.

PREFACE TO THE SIXTH EDITION.

THIS work has been revised to meet the latest demands of the Education Department, and additional chapters have been found necessary owing to the very considerable development of the curriculum of the Elementary School.

The subjects now dealt with are:—the Civil Service style of Handwriting, Composition (with its difficulties marked in definite stages), Letter-writing, Geographical Readers, and Elementary Science. The important subjects of Drawing, Kindergarten, and Varied Occupations have been fully treated; Paraphrasing and Précis-writing have been included in the chapter on Grammar, and Physical Exercises now form part of the book.

The paging of Part II. is continuous with that of Part I., the chapter on Registration has been adapted from the latest Code, and very useful and suggestive hints from Schedule VII. have been incorporated in the book. The cross references have been removed, and it is hoped that the complete index will be found very useful to teachers.

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CONTENTS OF PART I.

SCHOOL WORK.

MANAGING A CLASS.

Class Management includes *Control* and *Teaching*. A good class-manager can both *govern* and *teach*.

Obtaining orderly attention is a necessary preliminary to teaching, and the ability to obtain it easily, a necessary qualification in a teacher. No one can teach a class effectively until he can control it at will, until he is master of the situation, or until he can secure that degree of order and respectful attention he desires, whenever he likes, and without trouble.

Good teaching helps to secure and maintain orderly attention, and to make government easy; there is little difficulty in controlling a class which is interested in its work.

Note that *we govern in order that we may teach.* Control is a prerequisite, but teaching is the main business; to put control in the place of teaching is therefore to mistake a means for the end.

Power to govern and *power to teach* are distinct; they usually go together, but one is no guarantee of the other.

Controlling power depends chiefly on character and *moral* force, teaching skill on *intellectual* acquirements and aptitudes.

We sometimes hear a man described as "a good teacher, but a poor disciplinarian," and the phrase gives emphasis to the distinction between power to teach and power to govern. But it would be more correct to say, "he would be a good teacher, if he were a good disciplinarian," for successful teaching demands this double skill.

Controlling power and teaching power *may be acquired*, in fair degree at least.

Most of the power that we have has been obtained by watchful painstaking and much practice. We have learned by *experience* and intelligent application.

But with the best teachers, there is a degree of unconscious skill, coming from *natural aptitude*, which may be helped by books, lectures, hints and examples, although it makes itself felt without them. In teaching, every one must fight in his own armour; *the teacher's individuality is the most important factor;* nothing can take the place of tact, *νοῦς*, "gumption," in him. If aptitude and liking for the work be wanting, a man can spend his time and power more profitably in some other pursuit than teaching.

Good class-government is (1) *real and decided*; (2) *kind and wise.*

(1) Government must be "*positive, not negative.*"

School rule must be more or less arbitrary. A teacher who allows children to follow their own bent, or to question his authority, sacrifices his influence, and not uncommonly sinks into contempt—a result sufficient in itself to show that he has proceeded on a wrong principle. *The teacher must have his own way:* his will must dominate; his must be the master-mind of the class, single, strong, supreme. His scholars should feel obliged to follow his lead; it is not to be a matter of choice with them.

The commonest form of bad government is owing to the teacher's *feeble personal influence;* he is unable to control, and his *class is not governed.*

Sometimes we find teachers who seem to be in their classes on sufferance; they are more or less at the mercy of the children, and get their own way only so far as the children choose. Occasionally these teachers are energetic, they talk abundantly, remonstrate, shout, threaten, or it may be entreat, and all to little purpose. More commonly they fail to assert themselves, they accept shortcoming helplessly, and are dull, tame, or timid, they surrender their authority, and allow themselves to be ignored. Faults of this nature are common enough, though they vary widely in degree.

(2) Government should be reasonable and intelligent, *kind and wise.*

Wide differences exist in the quality and manifestation of force. There is an *influence*, genial, considerate, intelligent, and yet most potent; at the other extreme there is *brute-force*, unsympathetic, tyrannical, and unreasonable, though it may be strong. Government may be decided, and yet be so irrational or severe as to be positively bad, or even cruel.

Whilst then the teacher must have his own way, yet his action should be wisely planned, and his demands reasonable. His will is to be law; he must rule *despotically*, but he ought to rule *considerately*, *kindly*, and *wisely*.

Children may submit to harsh government from necessity, but they will chafe under it, and would rebel if they dared. Outward obedience is rendered, but the spirit of revolt is there; cowed, it may be, for the present, but waiting an opportunity to assert itself.

Leading and Driving. The difference between the higher and lower styles of applying force is well indicated by these terms.

Leading consists in *securing the child's willing co-operation*, and inducing him to go on by *making the onward path attractive.*

This can be done if *methods be adroitly based on a knowledge of the motive forces at work in the child*, whilst there will always be a difficulty in forcing him to a course contrary to his inclinations.

We do not mean that there is nothing in the native impulses of children which we cannot enlist on our side. All their dispositions and tendencies need guiding; some must be stimulated, and others curbed and restrained. But every teacher who studies his scholars carefully, will discover forces which he can attach to himself as allies, and will see more clearly those which he must meet with consistent opposition.

The teacher must be regarded as worth following, if he is to obtain willing followers. *Sympathetic insight* must be joined to *definite purpose*, *ready tact*, and general *kindliness.*

Driving is more rough-and-ready; it makes much less demand on a teacher.

But it involves a constant *rasping contact* with the child's susceptibilities, and tends to *provoke resistance*, and *arouse a spirit of revolt.* An *aggressive, irritable, and irritating manner* too often accompany it; there is also a *selfish aspect* about it, an appearance of sacrificing the child's comfort to the arbitrary will of the teacher.

Yet the best of us have to resort to it at times, whenever we are not skilful enough to make higher motives operate. *Avoid using it;* try also to *tone it down* continually. Some manage to make it almost coincide with "Leading."

"*Suaviter in modo, fortiter in re*"—gentle in manner, strong in act—is a good motto for us.

Good government may be mild, but there is strength behind it; the velvet glove covers the iron hand.

School duty should be made as plain and inviting as possible; what it is, and how it may be done should be clearly and pleasantly shown; the teacher also may take the lead, and encourage the child to follow. But if the scholar decline to respond, he must be driven to his duty by some

means, in the interest of himself and the class. The summary is :—(1) *There is your duty:* (2) *You can do it:* (3) *Now, do it.* Behind this, unexpressed, but well understood, is :—(4) *If you refuse, you will be forced to do it.*

Hindrances to Control originate partly in the *teacher*, partly in the *scholars.*

Teachers are too apt to blame the children for all the evils that arise in the class, although *unskilful management* is answerable for defect quite as often as *childish perverseness.* Control is made difficult where teaching is weak, where the teacher lacks earnestness, self-reliance, reasonable self-assertion, and discriminative insight, and where he uses his eye, ear, and voice poorly. Nor can anyone govern a class unless he sees and knows almost instinctively *when* to strike in, *what* to say or do, and *how* to say or do it.

Many *child characteristics* oppose the teacher, unless he can utilize them. Amongst these are natural *Restlessness,* leading to Disorder and Inattention; *Heedlessness,* which produces Carelessness until the "Discipline of Consequences" has had time to work; *Self-assertiveness,* which induces children to try their strength against their teacher, and so on.

Managing a *class* also, is a very different and far more difficult business than dealing with a single child, or with only one or two children.

Practical Control requires that the teacher shall (1) *Establish his Authority,* and (2) *Use it wisely.*

The second rule really includes the first, for Authority is established by being wisely used.

(1) **Establishment of Authority.** Indicate by your *manner* that you know your position and power as *ruler,* and that you intend to maintain it. There should be a *quiet assumption of Authority.*

Show a business-like *self-reliance,* and a modest *confidence,* as well as that reasonable *gravity* in tone and manner which experience has proved to be so great a help to control.

Guard carefully against showing that you anticipate any difficulty. Do not assume the possibility of disobedience, even if you secretly expect it. If you seem to anticipate that all will go well, this in itself will help to secure the propriety you desire.

Whilst you *avoid obtruding your authority,* yet, if it be challenged, *vindicate it forthwith.*

Your *comfort* and *success*, as well as the *respect*, and even the *good-will* of your pupils, will depend on the completeness of your victory. *You must win by some means* when conflict comes. This is the crucial point in practical control.

No detailed rules can be given which will apply to all cases. But it will almost always be safe, if you *imagine yourself for the time in the offender's place, and treat him in the way which would have been most effective with you.* Common sense in applying this treatment will generally set things right.

Check the beginnings of inattention, disorder, and undue self-assertiveness. Look for them carefully, yet not with unwise anticipatory minuteness. Sometimes too much is made of what might be better passed over. But when the proper time comes for you to strike in, strike to some purpose, and so make your interference effective.

Use discretion in appealing to higher authority.

Monitors, pupil-teachers and all subordinates may call on the superior teacher to support them in certain cases. But young *teachers must learn to conquer their difficulties for themselves* before they can rule. Do not appeal at all if you can possibly avoid it. Keep the control in your own hands if you can. *There is always a danger of weakening your authority, if you ask for outside help to maintain it.*

(2) **Wise use of Authority.** Two important rules should be noted:

(1) *Make obedience as easy as you can.* Be strict, yet kindly; reasonably exacting, but not severe.

Children obey with *certainty, when they feel obliged* to do it; they obey with *pleasure, when they feel the teacher is their friend.* Kindness is sure to be recognized and responded to.

Some teachers have "*a vexatious aptitude for falling foul of children*," and of *making obedience irksome.* Instead of guiding boyish impulses into a proper track, they see nothing but what is bad in them, and therefore oppose them point-blank and deal with them as unmitigated evils. Thus they are always on bad terms with their class, and their own practice is to blame for it. If teachers were in the habit of *recollecting their own childhood*, and of occasionally *imagining themselves in the child's place* now, their professional eyesight would often be cleared, and their spirit and style of dealing with their classes be vastly improved. Children now are no worse than we used to be; they are amenable to the same influences as we were; and it is unwise and cruel to think of them or deal with them as though they were exceptionally wicked.

(2) *Throw the onus* of maintaining good conduct and orderly attention *upon the children;* make each pupil responsible for his share of class-duty.

This is the *fundamental rule for control.* Until the teacher has learned to apply it, he is driven to ceaseless meddlesomeness, directing, checking, and reprimanding. So much time is often taken up in telling children to do what they already know they should do, and in telling them not to do what they already know they should not do, that the time for teaching is sadly broken into and the teaching itself suffers seriously. It is a great mistake for the teacher to act as though the scholars had no well defined duties, or to allow the child's responsibility to end when he has for the instant obeyed the latest command.

Every offence against school-rule, wilful or thoughtless, *ought to be followed by* an appropriate *punishment;* breaking a rule should always involve unpleasant consequences. *Offences are minimized when punishment invariably follows.* Where the relations between children and their teacher are of the highest kind, a *look* of dissatisfaction will be a sufficient punishment. If a *word* or two, uttered in a *tone of warning*, or of *displeasure*, be not enough, the teacher may rest assured that in nine cases out of ten there is serious defect on his side. The necessity for constant appeal to coarser punishments may be a mark of absolute unfitness in the teacher.

[**Notes for Students in Training**. Students usually find it hard to deal with classes in Practising Schools. It may do good to see some reasons for this.

Commonly a student obtains his *first experience of strange children* in a practising school. In his own school he knew the children, and what they could do; he had established his authority, and was (or should have been) on good terms with his class. Now he is confronted with a large class, he knows none of the children, his personal authority is not yet established, he has only an indefinite idea about the children's acquirements and powers, or about the traditions, tone, and specialities of the school.

Then the children know that visiting students are in their class only for a short time, and that *their object in visiting the school is to practise on them.* They take this as a sort of challenge, and try their teacher as far as they dare. Further, *they have met with teachers who were very weak,* and this recollection is another inducement to try how far they can go with the fresh teacher. Not infrequently they manifest a perverted ingenuity in this.

Once more, *it is the head teacher's duty to find out what the student really is;* things may be therefore allowed to go further than they otherwise could.

Two or three hints may be of service. (1) *Find out what the children can do*, before you go into the class, and then (2) *get a clear understanding as to what you are expected to teach*, *i.e.*, what special part or detail of a subject has

to be dealt with from hour to hour. (3) *Prepare the lessons carefully*; let there be no hand-to-mouth teaching. (4) *Keep every child hard at work*, as a little tact will enable you to do. (5) *Rely on yourself*, whilst you (6) endeavour to *conform* to the letter, and *enter into the spirit of the school regulations*. (7) *Keep your temper* above all things, and generally (8) show your versatility and strength by *rising to the circumstances*, and mastering them.]

ORDER.

Good Order is one *result of good Discipline.*

It is that regularity and method in conducting all the details of school-work which follow from the action of *good rules steadily enforced.*

It is a matter of *arrangement*, not of accident. In a well-ordered school, every *thing* has its appointed place, every *person* his appointed duty, and every *duty* its appointed time, place, and mode. What is arranged for is also *carried out.*

Profitable work is impossible without Order.

Where a certain measure of order is wanting, teaching is a mere form without power. The value of school-work is usually proportionate to the degree of Order that is maintained.

The *comfort and satisfaction* of both teacher and pupils depend on strict holding and complete Order.

Disorder is painful, wasting, and demoralizing, whilst Order is a source of gratification in itself. Children will lapse into disorder if loosely held, but in their hearts they prefer good Order.

Some common mistakes. (1) **Laxity**; *loose, weak, partial,* or *inferior* Order, a practical suspension or relaxing of rule.

This is the commonest mistake. Laxity is sometimes so gross as to seriously interfere with work. Usually it appears in whispering to neighbours, or in disturbing movements when immediate work is finished. Little improprieties occur, and are tolerated, or not effectively checked, and these, though they may seem harmless enough one by one, soon have a mischievous effect.

(2) **Undue stringency**; making *mechanical Order a chief end,* instead of a means to something higher.

Some teachers have "a morbid concern for appearances" (*Gill*). They are martinets and drill-masters rather than teachers. Outside symmetry, harsh decorum, and "Order" are obtained, but vitality is crushed out of

the children. Mr. Mosely wrote of a school where this false Order was so stringent, that "the children were afraid to think!" Comfort, and energetic mental life are better than symmetrical appearance.

There may be an "*orderly disorder*"; outward appearances may be temporarily sacrificed to the natural action and movement induced by absorption in work. Freedom from constraint may aid concentration of mind; a child cannot give all his force to working a sum, if he have to think about his feet at the same time; his mental activity may induce forgetfulness about "standing to the line." It would be a pity in such a case to sacrifice the greater to the less. Yet this is to be *tolerated rather than encouraged*, for it will soon degenerate into active disorder if it be not watched and controlled. At the utmost, *it must never pass beyond the point where the teacher can restore strict Order by a single quiet word.*

(3) **Irregularity**; a fickle, fast-and-loose style; an *alternation of strictness with easy-going laxity.*

A constant level should be aimed at.

(4) **Passivity**; *inertness, cold tameness*, and *vacant stillness*, instead of vigorous yet orderly work.

Good Order is joyous and vivacious; it may be quiet, but it is never dull.

(5) **Pettiness**; *finical* and unwise *minuteness; want of comprehensiveness and robustness*, giving *needless orders.*

In a well-trained class, it will be enough for the teacher to say, "*Attention*";—"*Show,—slates*"; and to pass his eye rapidly over the class after each word of command. The movement can be well executed in from three to five seconds. Sometimes we hear some half-score orders given to bring about the same result; "*Stop work*"; "*Pencils down*"; "*Hands down*"; "*Cover files*"; "*Slates ready*"; "*Show*"; *Hands at bottom*"; "*Slates inclined*"; *Sit up*"; &c. If also this teacher has learned *never to give an order without seeing it obeyed*, he will pause between each direction, and often have the movement gone through again, perhaps from the beginning; all this involves a serious loss of time, and tends to annoy the children.

(6) **Want of foresight and arrangement.**

This may appear in many places and ways. Order depends first on careful prevision and arrangement, and then on seeing that arrangements are carried out. Neglect of either is fatal to good Order.

Marks of good school-order. (1) It is **habitual**; it seems to come (almost) as a *matter of course;* it appears to be (almost) *voluntary;* there is (little or) *no talking* on the subject, and *never any fuss* about it.

Good Order is not a thing of fits and starts, but of methodical routine. Time and trouble are required to reach the standard "good," but when once reached, no further straining is apparent, nor does Order depend on the presence and constant interference of the teacher.

(2) **It is intelligent**; and commends itself to the intelligence of the pupils; they seem to know and appreciate its purpose.

When sympathetic good feeling is joined to sensible views about the purpose of school-order, and when rules, and plans for enforcing them, are based thereon, the resulting Order will have the quality we advocate, and the elder children at least will obey with *cheerful alacrity.* This feeling goes further down a good school than some would imagine.

(3) It is **thorough**, comprehensive, complete. *Everything* pertaining to the school and its working is *provided for by rule and supervision.*

(*a*) **Schoolroom and premises.** *Tidiness* and *cleanliness* appear everywhere. *Things are in fit places.* The school *apparatus* is systematically distributed and well kept. *Maps and diagrams* suited for each class are placed in orderly fashion close at hand, when they are not hung symmetrically upon the walls; so also with *lesson sheets*, *pictures*, &c. [When maps are hung on the walls, arrangements should be made for taking them down readily; fastening them by a slip-knot to a cord running over a pulley answers very well. Maps should be put upon a proper stand, or some other satisfactory plan of exhibiting them before a class should be devised; it is not well to hang them over the black-board, as this prevents the teacher from using it, and it is decidedly bad to let them rest on the pointed top of an easel, as is sometimes done. *Accidental damage ought to be repaired* at the first opportunity; preventable or remediable dilapidation is an evidence of disorderly tendency or habit. *Harm is done to the children* when a teacher doubles up a map carelessly, or puts it on the floor disrespectfully.]

Easels and *black-boards*, with pegs, chalk, and dusters, should be ready to hand. [*Pegs* may be tied to the easel with about a foot or eighteen inches of whipcord, a *duster* hung on it by a loop, and *chalk* kept in a small box fastened to the easel.]

Reading-books for each class should be kept tidily in convenient places. If children find their own books, pressure should be put upon all to bring them. Much disorder and some ill-feeling are caused by bad management in this matter.

Copy-books, exercise-books, dictation-books, &c., should be treated with respect, and be distributed and collected in an orderly manner. [They should never be thrown across the class; all necessity for this is obviated by the teacher standing between the second and third desks when distributing the books. Or if children occupy the same seat from day to day, the books from each desk may be kept together, and passed along one by one when given out, each child keeping his own book as it reaches him, and passing the rest on; books may be collected also on a similar plan. When not in use, copy-books should be carefully packed away.]

Pen-nibs should be of good quality, and renewed as often as necessary. The use of a uniform make of nib throughout the class should be insisted upon. *Slate-pencils* often cause annoyance and disorder. If the teacher cannot insist upon each child providing himself with a suitable slate and a pencil of proper length, these necessaries must be provided by the school, and kept ready for use.

Providing a due supply of *ink* is typical of one of the small matters which influence Order and work, and from which the teacher's character may be inferred. Unless ink be of decent quality, and in sufficient quantity, every form of writing exercise must suffer. Yet we find schools or classes where some inkwells are not supplied; then there is running about to remedy the defect, to the temporary stoppage or serious detriment of class-work; other wells are over-full, so that the ink is shaken out by movements of the desk, and the children's clothes and books are soiled, as well as desks and floor. [Inkwells are easily filled from a small lipped jug, or can with a spout, and an old damp cloth will remove ink spilt inadvertently. A solution of oxalic acid will remove ink-stains from the desks, but this substance is a dangerous poison, and the bottle containing it must be carefully locked up when not in use.] All these things seem very obvious, yet they are often neglected, sometimes it may be because they are regarded as beneath the teacher's dignity. It is a misfortune when anyone gets too big for his duty.

The *playground* requires careful supervision as well as the schoolroom, and the needful regulations for *decorous conduct* in it, and for its *tidy and orderly appearance* must be made and enforced. The *offices* should be scrupulously clean, and no writing or drawing should be found on any part of the premises. [Any writing, &c., which is discovered had better be erased at once.]

Arrangements have to be made for *caps, cloaks, bags,* &c. None of

these should be allowed to lie about the room, or to be in unauthorized places. It is better to push Order to an extreme here, than to tolerate looseness or want of respect for property. See especially that caps, &c., are hung up neatly, and distributed or taken down in order, when children enter or leave school.

Movement, *position*, and *posture* must be provided for. Ordinarily children will form lines in suitable places in the playground before school, and will march in order to their places in class. Before a lesson begins, the teacher will see that files are covered, and the proper position assumed. Most school movements should be executed at the word of command, which may be given verbally, and in military style, or by signal, moving the hand, clapping, &c. Children ought not to be touched when being moved.

(*b*) **Pupils** are *clean* in person and clothes ; they are *punctual*, so class-work and Order are not disturbed by late comers. They are *active* in manner and movement, yet *restrained* and *quiet ;* there is *no commotion*, rudeness, nor trifling.

(*c*) **Teachers** should set an *example* of intelligent obedience to school rules, and try to secure Order by preparation before school, and suitable action during school hours. They should see that rules are understood, and should supervise carefully.

(*d*) **General Work.** In a good school everything appears to be *foreseen and provided for.* There seem to be *comprehensive rules* for everything, and these are *adhered to ;* the result being cheerful, continuous, precise, quick, and decorous general work.

To obtain and keep Order. Assuming that the teacher has *made up his mind to get it*, or that he has determined that *he will have it*, the other essentials for Order, as in all matters of practical Discipline, are: (1) *Good rules*, to be framed by the teacher,—(2) *Rules to be well known*, the teacher must teach children their duty about Order,—(3) *Rules to be adhered to*, the teacher must supervise, and if need be, enforce Order.

ATTENTION.

Attention is a *voluntary concentration of mental energy;* it is an *effort* of Mind, by which Thought is fixed, or compelled into a certain channel.

"Attention is a voluntary act; it requires an active exertion to begin and to continue it; and it may be continued as long as we will." (*Reid.*)

Without the child's attention no good can be done. Attention is even more necessary than Order.

Attention exalts the efficiency of all the mental faculties, and gives them a power they would not otherwise possess. (See *Hamilton*, Met. i., 248.)

"The impression which anything makes on the *Memory, depends much on* the degree of *Attention* given to it." (*Dugald Stewart.*)

Bain remarks that "*the first aim in all teaching*" is "to evoke, charm, cajole, compel this attitude" of Attention and Application of Mind. (*Education as a Science*, p. 108.)

Difficulties in obtaining Attention.

(1) "*Will-weakness.*" The child is *unable* to control his thoughts, to shut out distractions, and to concentrate his Attention resolutely on a particular subject.

(2) *Wilfulness* may interfere; the child may determine to attend to something different from that which his teacher desires.

(3) *Children do not see the use* of being attentive; they seldom realize the connection between that requirement and its ultimate value to them.

(4) *Teachers are liable to be deceived* by appearances, and so mistake the outward show of Attention for the real thing. Habits of day dreaming are undetected.

(5) Above all, *teachers often fail to interest their pupils*, and thus fail to compel attention in the best way.

Conditions determining Attention. Attention is a voluntary *act*, it depends on the Will. The will responds to *stimuli or motives.* The art of securing Attention lies in *bringing adequate motives to bear on the Will.*

When we do anything voluntarily, it is either (1) because we derive actual *pleasure*, or expect to derive pleasure, from doing it; or (2) because we experience or anticipate *discomfort*, if we refrain from doing it. ("*Pleasure*" and "*Discomfort*," as here used, are intended to have their widest meaning, and to stand especially for the commendations and reproaches of conscience.)

A child gives his attention readily enough when he *likes* his work; the difficulty begins when work is *indifferent or distasteful*. Tell him a tale, and he will be all attention; try to get his Attention to a lesson on "Abstract Nouns," and you may have some trouble.

Our art consists, partly in *putting a premium on careful Attention, and* thus encouraging it,—partly in *making the consequences of careless Inattention disagreeable*,—and generally in *combining both sets of motives* judiciously.

Cultivating Attention. Forming a habit of attention is a valuable end of Discipline, not only for school purposes, but for success in life.

Capacity for business depends largely on the power of *concentrating* Attention fully on one thing, of dismissing all irrelevant subjects for the time, and on the further power of rapidly *transferring* the Attention completely from one subject to another. *Continuous* or sustained Attention is another desideratum. Genius itself "is nothing but a continued Attention." (*Hamilton*.)

The same qualities conduce to, or are necessary for good work in school.

Children have to be *trained* to Attention; the power of voluntary mental control has to be developed in them.

At first, the child is at the mercy of all sorts of distracting *outside influences*, the latest motive is most powerful with him; anything that happens is enough to call off his Attention. Our object is to enable him to *give* his Attention for a *longer* time, and in a *concentrated* form, under the influence of *calm internal motives*. Complete control of the thoughts, and the power to transfer them immediately and fully, can come only after much practice.

The following points should be noted.

(1) *Minds differ in natural quality*; they therefore need different treatment. A *sluggish* mind can be roused only by the most urgent and stimulating motives; a *weak* mind may be quickly roused to Attention, but as quickly expends itself in the effort; an *acute* mind is capable of a

very vigorous momentary effort; a *profound* mind is capable of long-continued Attention, and can sustain its Attention by motives of the most tranquil character.

(2) *Natural aptitudes vary.* Not only do some people have superior native powers of concentration, but there seem to be natural preferences and dislikes for different subjects and forms of thinking. Interested Attention is easy or difficult accordingly. Education, however, has much influence over these peculiarities, as, indeed, it should have.

(3) *Acquired aptitudes vary.* Habits of Mind are of the first importance, and these are developed by practice. The good effect of Education is seen prominently in increased power of Attention, which grows with practice.

(4) *Much depends on the teacher's aims and methods.*

(*a*) The beginnings of mental control are difficult; young children's Attention is not under their command; each new sight or sound attracts them at once. Early education must recognize all this; early training must be made attractive; *the incipient stages of Attention must be made pleasant.*

(*b*) *Attention should be made easy.* This depends largely on the foregoing; it is easy to attend to what gives pleasure. *Only a limited amount of Attention*, however, *is possible*, and with children this amount is small. Do not, therefore, ask too much, or try to do too many things at one time. The demand ought not to be too heavy, therefore its length should be in inverse ratio to its severity.

(*c*) *Avoid failure*, as you may do by making Attention pleasant and easy. It is always depressing to fail when one tries, and with young children the depression is most discouraging.

(*d*) *Acts of Attention should be repeated* until they settle into Habit; *voluntary control should be gradually exercised* until it becomes strong. One firm step makes the next similar step easier; power and vigour come by practice; each effort adds strength, and at last voluntary Attention is rendered with ease.

Hindrances to Attention. Some things *prevent* a child from giving his Attention, others *distract* it after it is given.

Hindrances and distractions may come from within or from without.

(1) **The Child.** Children differ. The treatment which secures Attention and is suitable in one case, may fail or be insufficient in another. One child is sluggish, dull, and heavy, another active, bright, and mercurial. To treat both alike is absurd; one wants rousing with the spur, the other may need the rein and the curb.

The *dull and sluggish boy* must have his Attention *quickened.* It is a great triumph, in this difficult case, when the teacher can *lead the boy to find pleasure in his work.* Make his work interesting ; let the dull pupil see that success is within his power, and thus induce him to attend and strive. Or, in fuller detail,—Make demand slight at first, do not push it beyond the boy's strength, do not keep up too long a strain, *give him a good chance of satisfying you,* and of succeeding. *Try to interest him,* find out what he *likes,* and use this in dealing with him. *Think of his case, and try to meet it* whenever you can fairly do so in class. Be on the look-out to *commend and reward his efforts,* show that you *take pleasure in his success,* and *encourage his satisfaction* when you legitimately can. Regular action on these lines will encourage the lad to attend, and will go far to develop any ability he may possess.

The *bright and active child* usually wants *careful holding* rather than stirring up. A little Attention enables him to hold his own ; he can easily give this, and he soon discovers that he is better off than most in this respect. He is, therefore, in danger of thinking too well of himself, of giving loose rein to his thoughts, and becoming inattentive and careless. He has to be taught by experience that it is his duty to put forth all his powers and to fix his thoughts. Manifestations of inattention must be checked firmly and, perhaps, sternly in him.

Natural powers and acquired aptitudes vary, and the amount of Attention each child can give varies in like manner ; the same holds with susceptibility to distractions. Lack of power, want of inclination, carelessness, and wilfulness may affect Attention ; every child should be studied that he may be dealt with in the best way.

(2) **The Teacher.** Faulty manner and faulty method are answerable for much Inattention.

Where a teacher lacks earnestness, or force of character, or rapid insight, or sympathetic vivacity, or ability to invest his subject with interest, or general tact, *he may not be able to obtain attention at all.*

If he be in too great a hurry, or be impatient, noisy, or verbose, or if he lapse into what is uninteresting, *he will have a difficulty in maintaining Attention,* even if he secure it at first.

When there is any noticeable peculiarity or oddity in his gesture, words, manner, or dress, *Attention is often distracted* from the proper subject to the teacher himself.

(3) **The Work.** The subject may be uninteresting, and Attention to it consequently irksome.

Our part is to make every subject interesting, and to get children to like it, as far as we can in fairness, though this must not be pushed to

extremes. We must therefore be ready with special effort and appliance when we have distasteful subjects to deal with, that we may "evoke, charm, cajole, compel" the Attention we want.

(4) **The School.** Where *Organization is defective,* distractions are multiplied, and Attention is sure to suffer. If *Discipline be loose,* and *Order be weak,* the duty of Attention is one of the first to be disregarded. When the *physical conditions are unfavourable,* Attention cannot fairly be looked for.

Where prevision and supervision are incomplete, Attention is inadequately provided for, and Inattention is so far chargeable to the Teacher.

If children are crowded, or if they have been forced to maintain some fixed posture until they are tired, or if they feel uncomfortable, their Attention will be diverted from intellectual work to their bodily discomfort.

(5) **Special circumstances** may render a child incapable of giving Attention, or may greatly interfere with it.

Weak *health,* very cold or very hot *weather,* defective *home-training, exhaustion* after heavy work, strong *emotion,* such as the dread of punishment which troubles timid children, may be instanced.

The two comprehensive **Rules for securing Attention** are: (1) Make *Attention pleasant.* (2) Make *Inattention unpleasant.*

If these rules be sensibly interpreted, and be brought constantly to bear, the work is done.

I. **Make work enjoyable**; get children to *like* it; evoke *pleased interest.*

Children cannot help being directly interested in what pleases them; if we can secure *liking,* we are sure of Attention. "Interest is the life of teaching." "Interest is the first requisite in a lesson." (*Currie.*) Inability to clothe one's teaching with interest is a sure bar to success.

Every teacher must *think out the* greater part of this *matter* for himself, contrive his own plans, and devise his own means of carrying them out.

We are helped by *noticing the effect that different subjects and different methods produce;* it is well therefore to be constantly and critically watchful. Our *experience of children,* and of our power in dealing with them, should help us in constructing workable plans. Dr. Bell held that

a school full of children was the best book for a teacher to study. If we *think over our own childhood*, and remember what interested us, enchained our attention, and led us to put forth voluntary effort,—if we recall what it was that forbade our degenerating into listlessness, and forced us to concentration almost in spite of ourselves,—we shall get much trustworthy assistance.

It then remains for us thoughtfully and carefully to contrive, and elaborate, and test plans and methods. Some failure is almost certain; when it occurs, search for its causes, then for remedies, and keep trying and trying incessantly, till we have found some means of gaining our end.

The *first general rule* for obtaining interested Attention may be *expressed in more detail.*

(1) *Make work intelligent*, that the pupils may respond to the demands made upon them.

(2) *Utilize curiosity.*

"In most cases our habits of Inattention may be traced to a want of curiosity." (*Dugald Stewart.*) "The state of sympathy and curiosity is the only sufficient guarantee of Attention." (*Currie.*)

If we have wit enough to invest a subject with *novelty*, or make it seem *curious*, or *strange*, or *valuable*, we shall get Attention. A clever teacher is often able to "*excite wonder or kindle delight*," even when dealing with common things, and so surely as he does this will he secure an attentive class.

(3) *Keep children constantly employed.*

"Unless the scholars are kept constantly occupied, they are sure to fall into habits of Disorder and Inattention. So important is this rule, that I have no hesitation in saying that in a school where it is strictly carried out, really good work will be done even if the methods of teaching be not the best." (*Dr. Arnold.*)

(4) *Give work a practical turn;* cause children to feel that what they are doing will be *useful* to them, and that it is *worth their while* to be attentive.

Arithmetic, especially Mental Arithmetic, may deal largely with ordinary life and business, domestic expenses, bills, and the calculations of carpenters, masons, builders, &c. Cultivate a "business hand" in Writing. Cause the children to write letters of practical value to them. *When they feel that "Knowledge is power,"* interest must come.

(5) *Let children feel they are succeeding.*

Success is a fine stimulus. Put it into the child's power to succeed by teaching him carefully, but do not make his work too easy. Encourage a hopeful spirit by every possible means.

(6) *Do not overstrain Attention.*

Even interesting lessons may be too long; there may be too much even of a good thing. However nourishing the intellectual food may be, only a limited amount can be assimilated at one time. A child finds it hard to attend when he is tired with previous effort.

(7) *Shut out distractions.*

Remove obstacles to Attention as far as possible. Make the fullest arrangements you can for minimizing sights and sounds which bid against you for the child's Attention.

(8) *Make use of subsidiary devices.*

Employ individual and well distributed questioning; encourage volunteers to hold up hands; let children take places; give and deduct marks; commend and dispraise as need arises. Circumstances must determine what device to employ, and how far to carry it, and whether it should be supplemented or not.

(9) *Show that you are interested;* let it be seen that you enjoy it; enter into the work heartily. Liking comes with success, and is one reward of painstaking, faithful work.

II. The best guarantee for Attention is *interest* in work, and the best means of securing Attention lies in *securing pleased interest, and making work enjoyable.*

But there is another side to the subject. **Attention is a duty,** and *a certain amount and continuance of Attention is to be demanded as a right,* whether the work be enjoyable or not.

It is *impossible* to make every part and detail of school-work intrinsically interesting, *nor,* indeed, *is it desirable* so far as moral education and preparing the lad for life are concerned. A teacher is not called on to pay for Attention with something nice. There is no royal road to learning; knowledge worth having has generally to be won by hard work. Rigorous and determined setting one's-self down to master a dry and knotty point, will do more for character and mental development than the flimsier Attention excited by pleased curiosity.

Even when work is distasteful, neglect or non-performance can be made yet more distasteful. A boy may dislike Grammar, and yet be induced to attend by knowing that Inattention will be punished, *i.e.*, that *he will be obliged to do or undergo something still more unpleasant, if he fail or refuse to attend.* The second rule for securing Attention owes its force to the application of this principle.

Two important complementary principles are therefore involved; these should be read together; *each by itself expresses only a part of the truth.*

Locke speaks of one thus:—"Were matters ordered right, *learning anything*, children should be taught, *might be made a recreation* to their play, as play is to their learning." Can we so order matters as to make learning as pleasant as recreation or play? We may profitably take the idea to heart, that it may leaven all our teaching, even if we do not realize it fully.

On the other hand, the learner must attend and strive, even if he have to be driven to it, whenever duty calls, whether the duty be pleasant, indifferent, or distasteful.

This truth may be put in another way.

The Teacher must get Attention.

(1) He should *induce* children to attend, by employing all the legitimate arts and devices at his disposal, so as to *make Attention pleasant.* A good teacher is distinguished by the fulness of his success in this.

(2) But this is not all. Duty cannot, and perhaps should not always be made attractive in itself, yet *the teacher must see that it is attended to and done, because it is duty.*

Make duty as pleasant as you can, but get duty done in any case.

DISCIPLINE.

Meaning. Discipline is the power or force which *secures*, or tries to secure, *right conduct*, and *prevents*, or tries to prevent, *wrong doing* in school.

(1) It tries to *obtain* that Order, Attention, Obedience, Diligence, and Perseverance, which are indispensable to the best forms of school-work. (2) It aims at *preventing* Disorder, Carelessness, Idleness, and other bad habits which would affect the school injuriously.

Much ambiguity is attached to the term "Discipline." Different writers employ it in various senses; they then really speak about different things, although they use the same word.

Etymologically, Discipline is what makes a *disciple* or imitator; it means "*the condition of a disciple*, and therefore implies subordination, and conformity to a system of rule." Sometimes it is made to signify a *process*, at others a *means*, at others a *result*. Occasionally its meaning is narrowed down to *punishment*, and at other times it is made synonymous with *training* or *education generally*. We shall regard it as the **moral government of the school**, and the chief agent in practical Moral Education, so far as the school is concerned.

All the means and appliances which the teacher uses to secure Obedience, to maintain Order, and to foster Application, pertain so far to Discipline.*

Discipline is not to be confounded with "Drill," nor with "Order," nor "Obedience." Drill is a means of securing Order, and aiding Discipline. Order, Attention, &c., are ends at which Discipline aims; Discipline is the power which secures them.

* All parts of school-work are more or less intimately connected and interdependent. Discipline is affected by the character of the Teaching and Organization. Whatever aids Control, or favours good government, or makes for profitable work, is so far an aid to Discipline. This will partly explain why certain considerations, which manifestly pertain more closely to Teaching, have yet been introduced into this chapter on Discipline.

child sit or stand still for a lengthened time, owe their punitive force to this fact.

Mental activity disposes us to *use* our mental powers, to find delight in observing, exercising the Imagination, and employing all forms of Mind faculty. If properly managed, *Diligence* and spirited *Application* are largely connected with this tendency; if badly dealt with, the Mind acts in directions of its own; *Inattention* ensues; Attention is transferred from the relatively uninteresting offered by the teacher, to the relatively interesting discovered by the pupil. The art of maintaining Attention, on its nobler side, lies in so working with Curiosity, Activity, and other motives, as to make present duty more enticing for the time than anything else.

Inattention is perhaps the most troublesome of all the teacher's difficulties, for its manifestations are often hard to lay hold of. Outward appearances are no sure index to what is going on within. Evidences may be so patent as to be unmistakable; children may palpably refrain from giving their Attention, and be openly busy with something foreign to the proper matter in hand. But it is provokingly common, even with good teachers, to find children who seem attentive enough, whilst their Attention has in reality wandered quite away, so that they are recalled with a start when a question is put to them directly. There is small difficulty in insisting on the semblance of Attention, but compelling the real mental attitude is not so easy.

Rules for action may be deduced from these considerations, *e.g.*, *Try to direct, not to repress energy;* "Fidgets is only force out of place." *Keep children constantly employed,* find them plenty to do. *Briskness and activity* in the teacher accord with the instinctive tendencies of children, serve to draw both together, and to help control. The more complete the Organization, the easier the Discipline.

Curiosity, *Inquisitiveness,* is that natural prompting to find out, learn, and know, which makes acquirement enjoyable when the motive is rightly dealt with. It is "the great instrument nature has provided to remove that ignorance [children] were born with." (*Locke.*)

Curiosity is exceptionally active in children; anything *strange or new* catches their attention at once. They set all their perceptive organs to work on any fresh object, and ask multitudinous *questions* which indicate the force of the natural impulse to learn. No little of the *mischief* with which they are credited (*e.g.*, pulling things to pieces) is perverted action originating in Curiosity.

This noble impulse is the *chief incentive to* that *Interest* which is

the life of class-work. The teacher who does not consciously lay his plans for utilizing this motive, is pretty sure to be a workman of very poor type.

Every teacher should study and practise until he becomes an *adept at putting old things in new lights*, at devising and introducing *striking and apposite illustrations*, and at giving *a spice of mystery, novelty, amusement, or surprise* to ordinary facts. Then he should be skilled in maintaining and developing the Curiosity he has evoked, until it has served his purpose, *i.e.*, *until he has made the child anxious to receive* the very information he himself wishes to give.

Curiosity is often *damaged by unwise* or even stupid *management.*

Legitimate Curiosity is sometimes *repressed with harshness*, whereas it ought to be encouraged. Children are told not to be troublesome, not to "bother," and so on, and are made to feel that it is wrong to ask questions at all. On the other hand, if Curiosity be *uncontrolled*, or "allowed to run riot," it usually takes the form of mere egotistical inquisitiveness.

Teachers frequently err in *not making enough of the motive*, or in not utilizing it to the full. (1) *Curiosity is not aroused* where it might be; the teacher does not awaken the best form of Attention; he does not make the subject interesting by introductory information, experiment, objective illustration, pictures, graphic description, questioning, or some device or combination of devices suited to the time or circumstances. (2) *Curiosity is not maintained.* "The state of Curiosity implies a difficulty which has been felt, together with a desire to surmount it." *Do not be in a hurry to explain* and clear up difficulties; *use them* to keep up interest until explanation can come with effect. *Do not tell too soon;* keep Curiosity on the stretch until the child *wants* to be told; what you say is then likely to go home and stay there.

The "*Love of Processes*" and the "*Instinct of Transformation,*" are special forms of Curiosity.

Children like to see things done, and to see changes brought about. Hence they take pleasure in watching the blacksmith, or carpenter, or turner, or draughtsman, or anybody who makes or transforms. Especially do they delight in constructing, altering, and at times destroying for themselves.

There is a degree of *pleasure in watching the teacher do anything*, such as setting a copy, making a drawing on the black-board, or even working a sum; boys also find a corresponding form of *pleasure in doing* such things *for themselves.*

Models which will "work," especially if they be of the teacher's own making, and such as boys can make too, are sure to arouse Curiosity; the same may be said of well-managed *experiments*.

Activities are put forth most vigorously when there is an *end in view*, or when *work has a purpose*. The *pleasure of success* reinforces these forms of interest.

A game of chess or a cricket-match owes much of its interest to the aim each player has before him, and to the definiteness and concentration this gives to his energies. The pleasure resulting from *employing the activities* is augmented by the *stimulus of opposition*, the *desire for victory*, the *excitement of curiosity and uncertainty* so long as the issue is doubtful, by the *intellectual gratification* connected with noticing and estimating the effect of every turn and move of the game, and then by the *pleasure of victory*.

Something like this is possible in school-work. The teacher can propose the *definite object to be aimed at*, and present it in such a fashion as to make it seem *worthy of pursuit*. If the object be *somewhat difficult* to obtain, so much the better; the learner is *stimulated by opposition*, if it be not insuperable, nor kept up till energy is exhausted. The teacher can *direct* the energies, enable the pupils to take the needful *successive steps*, and cause them to *see how each makes for the wished-for result*. Interest increases as the learner perceives he is nearing the goal, and culminates in the *satisfaction of success*.

Fear, "the apprehension of future evil," is an emotion of very wide range, passing from coarse *Terror* at one extreme, to a *refined apprehension of giving offence* at the other.

The emotion differs so greatly in character and intensity, that the term really stands for one thing at one time, and something very different at another.

Fear as **Terror** is a *coarse*, *wasteful*, and *dangerous*, though *powerful* motive.

Gill speaks of it as paralyzing perception, and annihilating memory, wasting nervous energy, enfeebling the brain, weakening the heart's action, and deranging the secretions. Bain writes, that it wastes the energy, scatters the thoughts, and is ruinous to mental progress; it either paralyzes action, or concentrates force on some single point at the cost of general debility. "'Tis as impossible to draw fair and regular characters on a trembling mind, as on a shaking paper." (*Locke*.)

The evils inseparable from its employment are so great, that it should be

kept for extreme cases, and used only as a *dernier ressort*, if employed at all. When it is imperative that an immediate and powerful moral effect shall be produced, terror may be called in; but it will completely divert attention from everything else, and render true intellectual work impossible so long as it lasts.

With ordinary children, and in ordinary cases, coarse terror need never be resorted to. A fair disciplinarian can work with other motives, and with higher forms of this motive. There is something seriously wrong in the man who feels driven to so rude an instrument every day.

One has not common patience with those stupid and cowardly people we sometimes hear of, who *frighten* timid children with dreadful threats, or by shutting them in dark cupboards and the like. No such persons should be found amongst teachers.

Fear *in its usual* **technical** *application*, is that form of the motive which exists when the feeling is so far toned down as to lose its dangerous effects,—when it is freed from its misery, and becomes a *prudential dread of doing wrong or neglecting duty*.

So understood, Fear is not only a *legitimate* motive, but is the *most reliable* the teacher can use. *He cannot really do without it;* "a degree of Fear is essential, and is quite compatible with the highest love." (*Hart.*) This desirable prudential attitude springs up when the "*Discipline of Consequences*" is well applied.

Differences in natural constitution render the motive stronger in some cases than in others; the lawful Fear which a teacher induces in the average pupil, may take a morbid form, and pass over into a species of Terror in a timid child. Many children need to be encouraged or educated out of *Nervousness* and *Timidity* by causing them gradually to feel their own power.

Carelessness, Heedlessness, is to be looked for in children until experience teaches them to be careful and heedful. The most available and trustworthy means of bringing about the better state, is to *use some refinement of Fear in connection with neglected or ill-done duty.* So long as there is no feeling of responsibility, so long will heedlessness be the rule rather than the exception. In cultivating the idea that careful striving and attention to duty will pay best (and the necessity for actively doing this holds quite through ordinary school-life), *dread of the consequences which carelessness entails* must ever be the most reliable instrument.

Refined *forms of* **Fear.** After the pupil has become attached to his teacher, he will try to please him, and will carefully avoid displeasing him.

These nobler refinements, however, must not be looked for too anxiously; they can hardly exert much influence except amongst the elder scholars, who know and appreciate their teacher best. They are always a splendid testimony to the teacher's worth.

An often quoted sentiment, "*Rule by Love and not by Fear,*" is sometimes *grievously misinterpreted.*

If the sentiment means that the teacher's conduct should be regulated by sincere good-will, and that in dealing with children he should use the finer motives, and avoid those which are coarse, the advice is sound. But if, as we sometimes see (especially in Sunday-school work) a teacher relies on good intentions, and without duly considering the waywardness, many-sidedness, and immaturity of child nature, tries to govern by talking, coaxing, "moral suasion," and so-called "Love," that teacher is likely to be speedily and perhaps roughly undeceived. *In school-practice the order is, legitimate Fear first; a wholesome dread of the consequences of ill-doing is the foundation of true Control and Discipline.* Respect follows, and afterwards a warmer sentiment may perhaps come.

The leading *rules or principles for our guidance* in dealing with this motive are:—

Utilize wholesome Fear; it is the most reliable motive which is readily available.

Avoid the terrible; do not terrify or frighten children; evil effects will certainly ensue, whilst any good results from such a motive are doubtful.

Frequent appeals to strong emotion do harm; they either interfere with and prevent real intellectual work, or they cease to exert their proper effect, and may indeed become almost contemptible from familiarity.

Cultivate the higher forms of the motive, but do not force them. They are noble and ennobling, and if they can be used, will do the most delicate work.

> *Dr. Johnson's* idea was, "Schoolboys can be governed only by Fear;" *Lord Mansfield's* dictum was, "Severity is not the way to govern either boys or men;" *Roger Ascham's* thought was, "The scholehouse should be counted a sanctuary against Fear."

The Sympathetic and Social Emotions. Children have a *natural craving for Sympathy.*

When hurt, a little child runs to his mother, and is comforted by her condolence; when happy, his joy is augmented by her kind and sympathetic manner and words.

Children will look wistfully at their teacher as he passes them in the

street, and are made proud and happy if he notices or speaks to them. The pleasure a little one takes in a toy, or a schoolboy in mastering a difficulty, or in executing a drawing well, or in any good piece of work, is intensified by knowing that his mother or his teacher rejoices with him.

Children have a *right to Sympathy.*

Children, especially little ones, ought to feel that their teacher appreciates their difficulties and troubles, and enters into their joy. Manifestations of kindly sympathy may be freely indulged in with infants, and a sympathetic manner kept up in every class. Some would do well to cultivate more carefully the expression of Sympathy by eye, face, and words. It is never derogatory in a teacher to try to make a child happy or to respond to the child's initiative.

There may be "*a terrible lack of Sympathy.*" (*Spencer.*)

Inability to understand children, or to see things with their eyes, is an almost fatal drawback. Earnestness alone will not prevent a teacher from making sad mistakes. He may undervalue child-feeling, may run counter to child-sentiment, may not acknowledge striving, nor recognize honest pleasure, and may be unfeeling for childish trouble. An unsympathetic spirit is a great evil in dealing with children.

When many are engaged, as in a school-class, in the same pursuits, under similar conditions, a community of sentiment springs up. "**Sympathy of Numbers**" is "an influence mighty either for good or for evil." "To lay hold of this principle, and turn it to good, is the first desideratum." (*Stow.*)

Some advocates of Collective Teaching, and Simultaneous Methods (Stow, for example) make very much of this principle; other writers on Education sometimes fail to notice it. Teachers, however, know very well that *dealing with numbers is much harder work than dealing with a single child*, apart from the necessity for supervision, for keeping all employed, and so on.

Our feelings, opinions, and conduct are influenced by the feelings, opinions, and conduct of our fellows.

Laughter is contagious; a merry face is exhilarating to a scholar, whilst a sad countenance induces answering sadness.

Children are powerfully affected by outward manifestations; herein lies one source of influence over them. A pleasing exterior, a smiling countenance, and a joyous manner, or an uninviting appearance, a gloomy face,

and a sad demeanour, will go far towards making school happy or wretched. Children are happy if they see we are pleased, and uncomfortable if we seem vexed; here we have a ready and potent means of control, if we can but use it.

The consciousness that others are sharing our feelings, enhance those feelings in us. Hence we find that the class as a whole is usually excited or subdued; orderly or disorderly; attentive or inattentive. Crowds and masses are favourable to *enthusiasm;* they can be swayed by influences which would be ineffective on individuals. A whole army of brave men has run away in a *panic;* a *thrill* often passes through an audience under the sway of a skilful orator; people will do *collectively* what they would never do one by one. (Appeals to conscience, to pity, and to the emotional nature generally, are most powerful when there is a *consensus* of emotion amongst the hearers.)

All desire to be like their fellows; we dislike to be odd, or to stand alone.

"Fashion rules." "One may as well be out of the world as out of the fashion." Grown men and women will do distasteful things, and undergo discomfort and pain, that they may dress and live like other people.

"*Tone,*" *Common Sentiment, Public Opinion* in school, correspond to Fashion in society. A certain mode of thinking, line of action, and style of conduct hold through the mass, and the generality fall into easy swimming with the stream. Any one who opposes, or does not fall in with it, is out of sympathy with the rest; he is alone in the crowd. The pain connected with loss of sympathy is evident from the distress which a boy feels when he is "sent to Coventry," or when his schoolmates refuse to hold any communication with him.

A skilful teacher and disciplinarian will *use this form of Sympathy as a spur to the laggards.* A dull or backward child can be incited to strive that he may be like his classmates, and not stand alone in his dulness. But *the clever child is tempted to lag behind*, that he may be in sympathetic company; in dealing with him, therefore, other motives, such as Emulation, Curiosity, &c., may have to be called in. The broad effect of Sympathy, by itself, is to produce a level in acquirement, thinking, and working, amongst the members of a class.

Common Sentiment has this influence not only on work, but on *Order, Attention*, and their opposites. *Each child is led to be orderly or disorderly, attentive or inattentive, because everyone else is.*

"Example is more powerful than precept, but *Sympathy is more powerful than either, or than both combined.*" (*Stow.*)

The "tone," collective idea, or general moral sentiment prevailing in a school, will go far to settle how work shall be done, whether Order shall be good or indifferent, and whether things in general shall take a high or low standard. Sometimes, especially in a new school, the teacher has to *oppose* it; if so, he must conquer, and let it be felt that his will is the strongest force in the school. The teacher's action always does much to *mould and form* school tone. The wisest and strongest succeed in forming and maintaining a fairly (if not fully) healthy moral atmosphere in school, and in *enlisting the majority on their side*, especially of the older scholars, who set the fashion. Perhaps public opinion is never entirely with the master, but all good disciplinarians manage to secure a good share of it.

Where tone is bad, the influence of numbers is to damage the individual; where good, to improve him. It is difficult to be attentive in an atmosphere of Inattention, or to avoid being punctual when everybody else is up to time. Common feeling may act in either direction; a large school may have its good or bad influence intensified because it is large.

Closely connected with Sympathy are the sentiments of **Attachment, Esteem, Regard, Reverence.** Where these exist (and they may exist) our power is wonderfully increased.

When a child believes in his teacher, and is attached to him, leading is easy. Discipline can be mild and yet thorough, and all its harsher forms can be dispensed with.

This condition, however, can scarcely if ever exist to the extent some imagine. But *it does spring up, when daily contact forces children to feel that their teacher is strong, and wise, and good, and that he wishes them well.* We shall do well to bear in mind the possibility of awakening such sentiments, but *it is imperative that we do not allow ourselves to be betrayed into unwise attempts to gain them;* there must be no favouritism, no relaxing rules, no pandering to false sentiment. *Being worthy* of esteem is the surest way to get and keep it.

Imitativeness [**Example**]. Children have an instinctive *tendency to do what others do;* they will *copy the actions of people about them*, especially of any one whom they regard as their superior.

Example is therefore a great power in itself, either for good or evil. But when the influence of Sympathy, Attachment, Emulation, and refined Fear are superadded, the combination is almost irresistible.

Imitation may be *conscious* or *unconscious*. Points which are observed, and felt to be worth copying, will be consciously imitated. Unconscious copying goes on also; children have even been known to imitate the physical defects and awkward carriage of a deformed teacher, without being aware of it.

Some obvious *practical rules* arise out of the facts of Imitativeness.

Endeavour to present *only such models as are worth copying;* do everything well; have everything done well.

Watch for, remove, *prevent bad examples.*

"*Example is better than precept.*" (1) In *teaching*, show how to do a thing by doing it yourself, usually though not perhaps invariably. (2) As the *teacher's* action is sure to be observed, and to be largely copied, let him exemplify the qualities he desires in his pupils. The teacher is, or should be, the child's model scholar, and model man; he cannot get rid of this responsibility; let him therefore try to discharge it reverently.

Emulation, Competition, Rivalry, Desire to Excel, is one of the strongest incentives to energetic striving.

Spencer observes that men will toil and struggle, each to outdo his neighbour, chiefly for the *desire of being looked up to* by others.

The element enters into our *games*, and gives interest to them.

Secondary rewards, such as places in school, and decorations and titles in society, are valued for the distinction they confer. Boys and men of energetic and ambitious temperament, will work hard to obtain a distinction they think within their reach.

Some serious evils are connected with Emulation.

There may be a *difficulty in keeping it within proper bounds.*

If it be not curbed, *contentiousness and self-seeking* are awakened; the pleasure of the victor is counterbalanced by the *chagrin* of the loser: *vain-glorious exultation and conceit* are aroused in one, *discouragement, ill-will, jealousy*, and *envy* in the other. Harm is thus done on both sides; hence some teachers shrink from using Emulation at all. Stow did not even allow "taking places," for he held that the child could be stimulated by love of learning instead of love of distinction, and that it was wrong to use the lower motive.

These evils may be met; *Emulation may be controlled and utilized.*

A *generous rivalry* may exist, to the advantage of both boys concerned.

Constituted as our schools are, *it is scarcely possible*, even if it were desirable, *to banish competition* from them. Members of a class must strive to outdo one another, if there is to be *life* in the work.

Nor do the dreaded evils follow in practice, so far as the great majority are concerned. With the bulk of our scholars *the good effects of competition far outweigh its disadvantages*. The ordinary secondary rewards which we use to excite and maintain application (such as rapid place-taking, giving extra marks, &c.) are so completely honorary, and fall to so many in a single day, and are felt to be so fair also, that they act rather as pure stimulants than as occasions for envy.

In the comparatively rare cases where competition is keen enough to cause anxiety, *the teacher's bearing* towards the scholars, and his mode of talking about their efforts, and successes, and failures, is a great point. *Honest endeavour should be generously recognized*, and success praised only so far as it is deserved. When a lad has done his best, he and all his classmates should be made to feel that it is no disgrace for him to have failed. On the other hand, the teacher should show his pleasure in a boy's natural ability, and *sympathize with him in his success*, and even use it as a spur to him and his classmates; but he will suggest that cleverness in itself is no credit to its possessor; that a boy is not better than his fellows because he is brighter, and that talent becomes noble only by being well used.

With reasonable foresight and watchfulness, and with fair guidance, *Emulation may be a decided power for good* in school.

Self-Esteem—Love of Praise, Fear of Blame. Our self-complacency is gratified if we find or fancy that we find in ourselves what we esteem in others.

Our good opinion of ourselves, as well as the pleasure connected with it, are enhanced if we are praised by one whom we respect.

Censure causes pain, corresponding to the pleasure excited by praise. Withholding praise when it is expected, is only one degree less painful than actual dispraise or blame.

The better form of Self-Esteem prevents us from doing what involves censure, and stimulates us to do what promises commendation.

Self-esteem may appear as *ludicrous Vanity*, which renders its unfortunate possessor intolerant of rebuke, or morbidly anxious for praise and sensitive to blame.

Praise and blame owe their force as disciplinary agents to the estimation in which the disciplinarian is held, and to the *felt justice* of the commendation or reproof by the recipient and his fellows.

Excessive praise is to be avoided; an unhealthy appetite for it may be induced, or it may cease to have any value. *Do not lead children to expect praise for simply doing what they should do.* Ordinary performance of duty may be received without demonstrativeness, whilst the teacher may still contrive to show his satisfaction. Pupils who neglect their duty need reproof; those who perform it are then praised by implication.

Yet *an occasional expression of satisfaction will do good.* If a boy has taken special pains, and his greater effort receives no notice, he is discouraged, and feels a sense of injustice. A nod, or look, or word, or putting the hand on his head or shoulder may be enough; sympathetic judgment must decide.

An evil spirit is aroused, when a boy's honest work is received disparagingly, or captiously; the lad is disheartened, he feels it is useless to try. The teacher also is looked on as unjust, and his influence suffers accordingly; anything he gets out of that boy in future is likely to be given grudgingly.

Love of Power. Strength of any kind gives pleasure to its possessor. There is a satisfaction and an incentive in *feeling that we know* or *can do* a thing, or *that we have resources and powers* which others perhaps have not.

Self-assertiveness *leads children to* test their strength, to *try their teacher as far as they dare,* and to venture as far as they can go with impunity. *But they will respect him the more, and like him the better, if he prove himself too strong for them,* if he show that he can hold his own easily, and compel them into a proper attitude towards himself and the school. *Boys like to have to deal with their master.*

This self-assertiveness is a characteristic perversity of child-nature, and perhaps it ought not to be regarded as an evil; *manly independence* has an element of this kind in it.

When only one or two children are concerned, the tendency can be readily overborne, but it grows into a serious difficulty with large numbers. *M ral force and tact* are called for. One teacher constrains children to yield; his moral power subdues them; they dare not disobey. Another seems helpless; the class gets beyond his control, and he can do nothing. Even he, however, finds a few children, usually weak or timid, who will submit to his directions; these he regards as "good boys," and all the rest as rebels more or less pronounced. Yet *with a strong ruler, the ring-leaders would probably turn out to be the sharpest and most intelligent members of the class,* the very lads to be made much of, while they are kept well under control. They were troublesome because they met with a weak teacher, not because they were exceptionally perverse and wicked. It

need scarcely be said that a teacher must get beyond the weakness here indicated, before he can do any practical good.

Certain decidedly *evil outcomes of this feeling require vigorous repression.*

Domineering, some forms of *cruelty*, *bullying*, and the like, are often instigated by the impulse to use one's strength, rather than by sheer cruelty, but they are nevertheless to be sternly checked.

The motive may be pressed into service.

We may use *monitors*, and invest children with *petty trusts* and *small offices of command*, which will gratify their love of power, and cause them to co-operate with us. *Utilize the leading spirits;* put responsibility upon them; but *watch very carefully* how they exercise their power.

It does good to let children *feel their intellectual strength* at times, and to give them the satisfaction of knowing what they can do. But this too must be managed with judgment, to prevent self-conceit.

Æsthetic Likings. Quiet but genuine pleasure accompanies good work, cleanliness, neatness, order, symmetry, presence of flowers, pictures, &c.

Make the school-room inviting. A silent good influence is always at work in a neat, tasteful, well-furnished, and well-kept school. Rooms can be *decorated* with maps, framed time-tables, class-lists, specimens of superior writing, home-lessons, drawings, &c. The infant room at least should be freely supplied with pictures, coloured for choice. Where flowers, shells, vases, busts are easily obtained, they brighten the room. Some children are unfortunate in having untidy homes; make the school-room and its associations pleasurable for them. A well-ordered room is no mean factor in general education.

Music, *school-song*, not only enlivens and varies school-work, and develops cheerful activity, but if *well-managed*, yields much pleasure.

If we take the needful pains, and exercise the necessary determination to make boys march with rhythmical step, to stand or sit in a definite posture, to dress in exact line and at proper intervals, to cover files perfectly, and so on, we soon find them *taking pleasure in seeing, and sharing, and executing these movements* well. Even hanging up and distributing caps, giving out and collecting pens, and other little movements may have an element of regularity and beauty infused into them.

Every school lesson may minister to the æsthetic instinct, apart from the moral gratification connected with doing one's best. Children will take a

pride, or find a true pleasure in good writing or a good drawing, in a well-kept and well-written exercise book, in neat methods and neat working of sums, in reading with intelligence and expression, and so on throughout.

Conscience, Sense of Right and Wrong, Moral Faculty. Cultivating this faculty, and inducing our pupils to follow its dictates, and do their Duty, is the aim of Moral Education, which is a very important branch of the mental training of a child.

A well-understood standard of Duty to which all school acts, words, delinquencies, and shortcomings may be referred is of the first importance. The highest forms of practical Discipline are connected with the use of this standard; reference to it should be constant, and everything connected with the school should be tested by it.

Every scholar has fairly correct notions about Right and Wrong. Even little children feel they *ought* to do Right, and will promise to be "good" when they get into trouble. Nothing is more effectual in dealing with a delinquent who has been subject to proper influences, than to ask him "*Was that Right?*" If a wise and kindly word be added, few natures will be unmoved.

Other important considerations have yet to be dealt with.

I. **The Teacher's Character.** The leading qualifications which go to make a disciplinarian, and which enable one to gain influence and govern easily are:—

Moral worth; the possession of those qualities which enforce respect.

Strength of Character, Decision, Determination, Firmness.

Self-reliance; Confidence in his power to govern.

Self-control; thorough command of temper.

A high ideal; a lofty standard and aim.

Common-sense views about children, their characteristics, powers, and needs. *Benevolence* and *liking for children* should be conjoined.

Common-sense views about Discipline, its purpose, and its legitimate application.

Rapid perceptivity, coupled with *Tact,* and ready *Promptitude.*

Teaching skill.

Physical qualifications, natural and acquired, connected with eye, ear, voice, and general bearing. A teacher's power to control and influence his class depends upon that vitality which is the outcome of a sound constitution.

"*As is the teacher, so is the school.*" His long-continued action and influence become creative, and his characteristics are reproduced in those

about him. What he *says* will do much, what he *does* will do more, but what he *is* will do most.

II. **The Teacher's Authority.** *Authority is the right to enforce obedience to Law.*

The teacher is called on to *make rules* and to *enforce* them.

This right is delegated to the teacher, not for his own gratification or glorification, but *for the benefit of the scholars*, or because, by using it well, he can do more for his pupils than he otherwise could.

In virtue of his Authority, the teacher has (1) *to frame and promulgate school laws*, to fix and teach what school-duty is, or to settle what is Right and Wrong in school;—(2) *to administer the laws*; to use the needful sanctions for performance of Right and abstention from Wrong, and to get Duty done.

Authority has to be (1) *established*, and (2) *wisely used.*

The wise use of Authority implies the possession of a high degree of practical skill.

The expression of Authority may easily be overdone.

A common-sense view of the purpose of Authority ought to free the teacher from obtruding his power, and acting like a Jack-in-office.

The teacher must never surrender his Authority. He may keep it in the background, but *he must guard it jealously.* Everybody should know that it is there, and that it will be brought to the front if necessary.

No teacher should become so *weakly* familiar as to make it difficult for him to interpose with effect when he feels it desirable. Kindly natures are most likely to go wrong here.

Try to keep a reserve of power. Avoid putting forth all your strength. Guard your resources carefully. Do not allow children to feel you have done your utmost.

A common mistake with young teachers is to visit small offences with heavy punishments. They send boys out to the master for trifling things and can do no more if a serious case should occur. Employ *looks*, *words*, and *variations of manner* as your common agents of Discipline; *severer forms* are rarely wanted, and they *lose their force if frequent.*

"*Authority must be submitted to simply as Authority.*" "Instant obedience, *à la militaire*, lies at the root of all proper training."

moments that looseness is apt to creep in, and it is imperative, in the interests of good order, that at these times the pupil should know exactly *what to do* with his book or slate, how he should stand or sit, where his hands should be, and the like. "Sitting still" or "standing still" may be part of the school routine, but "doing nothing" should never be recognized as legitimate work.

As a general principle *Rules are administered best when they seem to take care of themselves, or when government seems to be impersonal.*

This standard cannot be fully reached in dealing with children; *a strong personal governor is wanted in school.* Yet school-government can have this element in it, and it should certainly be aimed at.

Some teachers make obedience a personal favour to them, instead of a duty to the school. They treat breaches of school-rule as personal affronts, and make a child feel when he is punished, that he is punished because his teacher is vexed. Nothing is more likely to promote ill-feeling and disrespect for rules.

Laws should be supreme. Principles, not personal caprice; *Duty,* not personal gratification, *should rule.*

School-law fixes school-duty. This being settled, teachers, scholars, and everybody connected with the school, become subject to the law, in their place and measure.

Magistrates and judges administer the laws of the country, but they have no power to set them aside. So a teacher would act unconstitutionally, and would bring school-law into contempt, if he were to substitute personal feeling for recognized principles. It is his duty and privilege to magnify the law, and create a respect for it, by exemplary conformity to its letter and spirit.

IV. **The Teacher's Eye** has two main uses, *Supervision* and *Expression.*

(1) **Supervision.** Children should be impressed with the idea that their *teacher can see everything.*

When the teacher is always vigilant, when his eye runs over everything, and is everywhere, children soon learn to respect his "wide-awakeness," and give up attempting to presume on his want of omniscience.

The Eye may be trained to a high pitch of activity and rapid perceptive power. This quick eye, when joined to determination, is the best instrument of Control.

Many teachers can take in the condition of a room full of children at a glance, and can fix at once on weak places and individual wrong-doers. With two hundred children or more before them, they can detect on the instant any one who puts his hand on the desk, or who indulges in any other unauthorized movement.

On the other hand, *some teachers do not* or cannot *see*, although their eyes travel about continually. They may know that things are wrong generally, but they are unable to *localize* the mischief, to perceive *what* is wrong, and *who* is to blame; hence they cannot strike in with decision and effect.

Try to *see what is going on at both ends and in all the corners* of the class. This is not very difficult. Practice soon enables one to keep the eye constantly on the move, and *to see with it*, without perceptible effort to one's-self or the children.

Arrangements should be made to help the Eye, and favour supervision.

Place yourself where you can *see all your scholars without turning your head.* Take the front desk as the base of an equilateral triangle, and stand as near the apex as you can. You can then *see, and be seen by all.*

Any children who, from backwardness or disorderly tendency, require special looking after, should be placed where they can be seen most readily.

Big boys should be placed behind the others.

When examining slates and copy-books, think which seat you should commence with, and whether you should take up the slate or bend down to the boy.

Even *when at the black-board*, you must keep up the idea of supervision by writing rapidly, by continuing to speak, by asking questions of the whole class, or of individuals, &c.

One eye should be spared for the class always, even if the other be wanted for book, or slate, or copy, or black-board.

Preparation sets the Eye free for supervision.

If the teacher be well-acquainted with the Reading-lesson, an occasional glance at the book from time to time is all that is necessary, and he is free to use his eyes in other ways; so also with Geography, and all school lessons.

(2) **Expression.** The Eye has been called "the window of the soul"; our *state of mind is visible through it.*

An *unspoken language* comes from the *living* eye, which informs

our pupils, generally with a near approach to truth, both what we *mean* and what we *are.*

Its revelations are so varied, and yet so complete and trustworthy, that *looks may do more than words.* The eye may sparkle with animation, interest, and pleasure; it may be lighted up with expectancy, sympathy, kindliness, and encouragement; it may express enjoyment or dissatisfaction, authority or weakness, determination or vacillation. It can *stimulate*, *warn*, and *reprove*, without stopping the work, without losing time, and without damaging a boy's self-respect. It may be *a means of promoting good feeling*, as well as *an active agent in holding a class, enforcing general discipline, and gaining moral influence.*

"A *kindly look, with firmness*, lies at the root of all proper training." (*Stow.*)

V. **The Teacher's Voice.** *Words* and *tones* may indicate strength; they are then only inferior to the Eye as disciplinary agents.

When large numbers have to be dealt with, the Voice is the prominent controlling force. It tells that the Eye is active, and adds its own monitions.

Voice and Eye co-operate; speaking helps seeing, and often does duty for it.

Voice has to do the coarser work. It is more roughly definite, though not so delicate and rapid in its influence as the eye. *The voice has its finer uses* in variations of tone, rate, and force, especially when coupled with appropriate facial expression. *It also rouses, quickens, and informs with abruptness*, when pupils become sluggish, or careless, or imbued with the idea that they are not watched.

Children estimate the power of their teacher not only by his looks, but also by what he says, and how he says it. *The very tones of Authority enable him to control to a degree, and for a time*, though not for long unless there be something stronger behind.

Adopt an *authoritative*, *grave*, and *decided tone* when giving orders. Cultivate a *quiet*, not tame—*deliberate*, not dull—and *impressive*, not ponderous style.

A deep tone is more effective than shrill utterance, and it imposes less strain on the vocal organs.

Deliberateness helps distinctness, whilst the teacher who talks in a hurry is often obliged to repeat himself.

In giving orders, let there be *no hesitancy*; give the children no opportunity to imagine that you do not mean what you say, or that you are doubtful whether they will obey you.

Children can be trained to listen. Even in a large room, there is no necessity to shout. Some teachers are habitually loud, instead of habitually quiet; their scholars then imitate them, and "*a noisy teacher makes a noisy school*;" this involves much waste of power. The habitually quiet teacher can secure immediate Attention, by uttering a word or two in an unusual tone, or with unwonted force, and can then fall back at discretion into his ordinary quiet style. The habitually noisy teacher deprives himself of this means of recalling Attention and restoring Order. "If thunder itself were to be continual, it would excite no more terror than the noise of a mill." (*Quoted by Calderwood.*)

A noisy school is usually, but not always, *a disorderly school.* The "hum of work" is better than lifeless quiet, and may be tolerated as the lesser of two evils. The "hum" of legitimate work is easily distinguished from the noise of Disorder.

Occasional *perfect silence* may be enjoined as a disciplinary agent, and a corrective of the noise of work. A minute or two thus spent just before school is dismissed, or at any other suitable time, is well spent.

If children desire to speak during school-hours, *it should only be after leave has been obtained.* No difficulty is more troublesome to the young teacher than the children's proneness to talk to one another. The difficulty can be properly met only by *insisting on silence*, unless leave to speak has been obtained.

Having given an order, see it obeyed. Let this be an invariable part of your practice.

Run your eye rapidly over the class after you have spoken, and do not proceed to the next order until your last directions have been fully and exactly carried out.

Do not repeat your commands.

If you really mean what you say, and if the children understand you, speaking once should be enough. The necessity for repetition is a sign there is something wrong.

Talk as little as possible. Never speak without good reason. Say only as much as is absolutely necessary. *Neither ask nor beg for Order.*

It is better not to speak at all than to speak to bad purpose. Test your power as a disciplinarian by the *infrequency* with which you have to speak. Avoid such expressions as "I will have Order," "I mean to be obeyed," and the like.

Let orders be definite; make your meaning clear.

Orders should be *short*, and expressed *in simple words.* Notice that if two or three orders follow closely on one another, without having one fully obeyed before the next is given, Disorder is inevitable, for some will be obeying one direction, others another, if indeed the children think it necessary to care about attending to any of them.

Avoid threatening.

Warning may sometimes be necessary, threatening very rarely, if ever.

VI. The Teacher's Disposition, Bearing and Manner.

Let manner be earnest.

Earnestness leads to thoughtful preparation, watchfulness, self-examination, and other good qualities, which deserve, and ultimately command, success.

Perfunctoriness is highly injurious to the *morale* of a class or school. When a teacher does no more than he is obliged, even this minimum of service is likely to be incompletely rendered. Whenever we notice a young teacher who is not habitually punctual, or who is very anxious to depart early, or who is careful not to do too much, we feel that his prospects are gloomy, for he evidently does not enjoy the work to which he proposes to devote his life. Either he should set himself resolutely to reach a higher standard, or he should give up teaching.

Our work ought not to be taken up lightly, but when adopted, *niggardliness* in expending one's-self *had better be thrown aside.* To succeed as a teacher, one must enter into the business heartily, and devote all one's energies to it. Success will produce liking; earnest endeavour alone will go far to make our work enjoyable. This being secured, the teacher's heart is enlarged; there is no temptation to try how little will pass muster; he will discharge his obligations liberally and ungrudgingly. *For the teacher's own satisfaction* it is *wise* to be thus generous; *for the sake of example*, it is *essential.*

Govern yourself. Self-control is as essential as Earnestness. One is the *regulative*, the other the *motive* power.

An *ill-regulated or hasty temper* is sure to betray its unfortunate owner into unwise speeches and threats, and sometimes into unfair or unreason-

able punishments; it *may* therefore *do incalculable harm* in a school. *An uncontrolled temper marks absolute unfitness;* its possessor may say or do something unpardonable in a fit of passion.

If boys find they can easily put their teacher into a passion, or induce him to say or do something ridiculous, *the bolder spirits will certainly try to make some fun* at his expense.

Irritableness is always a weakness. If it be urged that some *hasty teachers* get on pretty well, the fair retort is that they *succeed in spite of their weakness*, and that their success would be yet more marked, if they could lay their irritableness aside.

Righteous indignation at wrong-doing, provided it be evidently *under full control, is powerful as a disciplinary agent, and as a means of teaching* children to look on *Right and Wrong* in their true light. The teacher must not allow his feelings to run away with his judgment, but he may show that he has the impulses of an honourable and warm-hearted man.

Cultivate broad and sensible views about school-work; try to foresee the kind of accidents and difficulties that are almost sure to arise; this may save you from annoyance when they come. There is also a *comical side* to many school annoyances (those arising from wickedness excepted), and it will do the teacher good sometimes, if he dwells on this aspect in private and enjoy it, although he may have to exhibit a different attitude when dealing with delinquencies judicially. If we cultivate our human sympathies, and try to enter into the feelings of children, this will put a different complexion on many little irritating trifles.

Avoid undue assumption, but *show yourself self-reliant.* Act as though you *know* your duty, and *can do* it, and *mean to do* it.

When confronted with a duty, face it fairly. The teacher must not flinch; there should be no nervous hesitation, doubt, or mistrust in his style. It is well to foresee difficulty, that we may arm ourselves; but when the call comes, *diffidence, timidity, and hesitation should be laid aside.*

Be *good-humoured, cheerful, vigorous, prompt*, but not hasty; *brisk*, but not in a hurry.

A smiling face, a cheerful tone, and a sprightly manner are infectious, and are as effective in promoting good order and work, as a glum countenance, a dull tone, and a heavy style are in hindering them. A smile or a shake of the head count for so much, that a teacher may well employ either as a means of Discipline, even if it be an exaggerated expression of his feeling at the time. The teacher also ought to have

plenty of energy and "go," provided he do not run on at too great a pace for the children to follow him.

Guard against monotony.

The Eye should vary its expression continually, like a thing of life; the Voice should be modulated constantly, and should alter its rate and force. The whole countenance should be animated and changeful, and not fixed like a statue. *Dull monotony* is most common, and most damaging, but there may be an "*energetic monotony*" too.

A teacher may be *quiet, and yet energetic and forceful;* this is the style that wears best, and that is least exhausting. "That *quietness* of manner that comes not of feebleness, but of restraint and collectedness, *passing easily into energy when required,* is a valuable adjunct to Discipline." (*Bain,* "*Education as a Science.*")

Be consistent. Cultivate *regularity, steadiness,* and *reliableness.* Avoid vacillation.

Children ought never to doubt how you will act under ordinary circumstances. They should always know what you want, and what will satisfy you. They should feel that personal feelings and accidents do not affect your style of dealing with them, but that you are regularly the same from day to day, and therefore reliable. They know then what to do.

Whims and oddities of all kinds should be watched for and carefully laid aside.

Be strictly impartial. Do not allow a suspicion to arise that you are influenced by favouritism or ill-will.

It may be impossible to esteem all scholars alike, but it is necessary to avoid showing special regard or dislike. Acknowledged favourites usually have a hard time of it with their fellows. A teacher strains his influence greatly if he err on either side.

Show a disposition to give children credit for what is creditable in them.

The teacher can *look* his satisfaction; this is usually enough. Sometimes he may express it *in words,* and few things are more exhilarating in a class than an emphatic "*Well done!*" or "*Capital!*" from a teacher who is not prodigal of praise.

It is easy, however, *to go to extremes.* Some teachers use commendatory phrases, "*Good boy!*" "*That's right!*" &c., far too often. They thus lose their value.

Avoid captiousness, carping, querulousness, grumbling, waspishness. "Don't be continually finding fault, or notice every trifling piece of mischief." (*Stow.*)

This precept is complementary to the last.

Disciplinary interference of the proper kind is widely different from habitual fault-finding; this last "involves a rapid evaporation of moral influence." A teacher's moral eyesight is diseased, if he is always obliged to find fault and complain.

Teachers are to be found who seem incapable of appreciating a child's efforts, and who take small pains to disguise their mal-appreciation. Sometimes they indulge in *sarcasm*, or adopt a *sneering* manner; both are in very bad taste when applied to children who cannot retaliate. There is a *good-humoured banter* of which one would speak more respectfully, and which, in wise hands, may be used to good purpose. But the power of being profitably, or even harmlessly sarcastic, or of using a jocular style well in class, is not so common as some would suppose.

Treat children with respect. Be considerate, patient, and courteous with them.

"The sooner you treat [the child] as a man, the sooner he will begin to be one." (*Locke.*)

He who is careless about hurting the feelings of a child, is unfit to be a teacher. "He who makes a little child happier for one hour, is a co-worker with God." (*Dwight.*)

There is no reason, apart from the teacher himself, why his pupils should not look on him as their friend as well as their master. **If he will act towards them with a large-hearted recognition of what he would like** if he were a child, he will come to be regarded as *a kind of big brother*, endowed with all sorts of excellencies.

Be firm, determined, and inflexible in having school-rules carried out.

In interpreting this, notice once more that it is *the school-rules*, not the *teacher's inclinations*, which have to be considered. Determination to have rules obeyed is not the same as determination to subjugate, or "bring a boy under," or "show him who is master," &c. (*Spencer*, "*Moral Education.*")

VII. **Drill and Discipline.** Well-managed Drill is a help to Order, and a means of Discipline.

It saves time, economises words, promotes smartness, and sprightly, exact obedience. It provides agreeable variety in school duty, and pleases

by exercising the muscles, affording an outlet for activity, and relieving the nervous system after the strain of study.

Almost all the needful school movements may be systematized, the details taught, and then executed at the word of command.

Two things have to be carefully observed. (1) *Everything should be done well;* if not, Drill fails as a means of Discipline. (2) *Drill is not to be substituted for more important duty;* if too much time is spent over it, so that other work suffers, Drill is overdone. In giving out pens for example, it is common to have pens placed at the end of the desk, and then passed along from child to child, each taking one and passing on the remainder. Each movement may be made as the teacher says, "One!" "Two!" "Three!" &c., *the object being to get the pens distributed quickly and with good order.* But teachers sometimes act as though Writing were less important than pen-drill. Time must not be wasted over these movements. Unless they are made *quickly*, they are ill-done. Yet time is saved, in the long run, by occasionally *drilling* the children to rapid precision in such movements.

A code of signals may be substituted for verbal orders, if the teacher chooses. There should be a *signal for silence*, and when this is given, silence ought to be instantaneous and complete. Boys can soon be trained to respond to "One!" "Two!" "Three!" or to a clap of the hand, or a motion of the head or hand, or even of the lips, where the sequence of movements is understood, as in moving from place to place, taking seats, and so on. Some teachers have developed *systems of signals by which all the common directions needed in school are given by strokes on a "claquet," and motions with the hand.* All such devices, *properly used*, are useful means of Discipline, though of themselves, appliances go for little.

REWARDS AND PUNISHMENTS.

Rewards and Punishments are necessary; they are employed by all governments. Rules for government (Laws) are enforced by two classes of motives. Discipline is maintained by a system of Rewards and Punishments.

"Good and Evil, Reward and Punishment, are the only motives to a rational creature." (*Locke.*)

(1) This principle has its highest exemplification in **God's government of the world**. He has given us directions for regulating our conduct in this life. We are incited to obey by actual reward, or by promise of reward for obedience, and by actual punishment, or by the threat of punishment for disobedience.

(2) **Society** enforces the morality it enjoins by the same motives. "The Law" acts by a series of penalties on those who disobey. Extraordinary merit and extreme liberality in the discharge of duty are rewarded by the esteem of other men, and in very exceptional cases, by the bestowal of special honours on those who deserve them.

(3) **Our Schools**, the little states that we are called on to manage, are to be governed on the same principle.

The use of Rewards and Punishments in school is justified by *analogy*, and by their *effectiveness*.

Reward is the *bestowal of pleasure*, **Punishment** the *infliction of pain*, in some form and degree.

Pleasure acts as an *incentive*, pain as a *deterrent* motive. Reward appeals to *hope*, punishment to *fear*. "Remove hope and fear, and there is an end of all Discipline. (*Locke.*)

When two experiences have been invariably or even frequently conjoined, *i.e.*, if one has been always or frequently accompanied by the other, we expect the concomitant whenever the one occurs.

If pain be thus associated with wrong-doing, wrong-doing will suggest the pain, and the pain will exercise its deterrent effect according to the amount of dread it inspires.

If a certain course of conduct is associated with pleasure, the anticipated pleasure is an incentive to perseverance in that line of conduct.

Note, however, that *the invariableness of the concomitance is an important element in the association.* If wrong-doing and pain, as well as well-doing and pleasure are *always* connected, the pain and pleasure will exercise their fullest force as motives. But if there be a break in the connection, and especially if the breaks be frequent, the connection is of necessity esteemed more or less accidental. Note, therefore, the high importance of *certainty* in the application of rules. It is the *certainty rather than the severity* of a punishment, that renders it effective as a deterrent motive.

The *essence of Reward* is the *gratification* it brings; the *essence of Punishment* is the *disgrace or shame* attached to it.

If there is no gratified feeling, there is really no Reward; if there is no feeling of disgrace, there is in effect no Punishment.

Rewards and Punishments owe much of their effectiveness to the teacher's character, and to the estimation in which he is held.

An approving smile from one man is better than a tangible present from another. Remonstrance or rebuke from one who is sincerely respected, may do more than sharp caning at the hands of a man who is not cared for.

Two classes of Rewards and Punishments are available in school.

(1) Those which owe their efficiency *solely to the honour, or to the disgrace* attaching to them; these we will term "**Secondary**" Rewards and Punishments.

(2) Those which, *in addition to honour or shame*, give *tangible prizes* on the one hand, or inflict *bodily pain* on the other; these may be termed "**Primary**" Rewards and Punishments.

Caution. Neither Rewards nor Punishments should be cheap and common in school.

In Society we find that the ordinary fulfilment of every-day duty is followed, not by positive reward (unless, indeed, such conduct be so long continued as to constitute a distinction), but by a negative *freedom from blame.*

Rewards in School should not be bestowed for mere ordinary industry or good conduct. *They should be given only for positive merit* of an extraordinary character in the individual who receives them:—"only when there has been an option, and the individual has voluntarily chosen the higher alternative."

When Punishment is frequent, it loses much of its effect; when rare and uncommon, it produces a sensation.

"If a right course be adopted with children, there will not be so much need of the common 'Rewards and Punishments as we imagine.'" (*Locke.*)

Rewards stimulate by appealing to present, or to anticipated pleasure.

They are a recognition of desert, and are intended to incite the recipient to continued or increased striving, and as a stimulus to activity in his fellows.

Objections to their employment. (1) *The difficulty of dealing with Emulation.*

Some earnest teachers consequently refuse to use tangible Rewards at all, and are sparing in their employment of secondary Rewards.

(2) *The tendency to regard the Reward as the end or object of good conduct*, a "*quid-pro-quo*," a species of payment for so much good behaviour.

Rewards have, therefore, been condemned as being of the nature of bribes.

(3) *Cleverness and brightness have an unfair advantage over mediocrity.*

As Bain puts it, a merit is made of superior natural gifts. Plodding earnestness may have no chance against brilliant parts.

(4) Rewards must be *limited to a small number*, if they are to be worth much, and so envy and other evils may possibly be called forth.

I. **Secondary Rewards** are purely honorary. They owe their value to the *honour* attached to them by the pupils, and this depends greatly on what the children think of their teacher.

For example, it would be esteemed an honourable distinction by the boy who is told to "*stand on the form*" because he has brought the best Home-lessons in his class on a particular morning. On the other hand it would be a disgrace for a boy to be made to do the same thing because his lessons are badly prepared. Note, therefore, that what is a reward in one case may be a punishment in another.

Such Rewards are rightly in constant use. Skill in devising and employing them is almost vital to good school government.

Among the Secondary rewards which are easily available in school, the following may be particularized:—(1) **Commendation**, *expressed Approbation*, occupies the premier place.

To be praised before one's classmates gives keen pleasure, whether the approval be expressed by looks or words.

Commendations should be judiciously distributed, and not be scattered broadcast. *Discrimination is needed*, so that we may neither praise without sufficient reason, nor withhold commendation where it is really deserved. The teacher should always show his appreciation of honest, painstaking effort. He should be especially on the watch to *reward the "dunces"* with an encouraging word whenever he can possibly do so; this is almost the only reward these poor fellows can get, apart from the consciousness of having done their best. Whilst the teacher is careful not to be lavish with his praise, he ought to be equally careful not to use it grudgingly. *His manner should be the reverse of captious.* It is noteworthy that it requires a higher discrimination to see merits, than to discover defects. There are cases in which commendation will be more efficacious than blame.

(2) **Taking places**, attaching honour to position in the class.

Changing places during a lesson, "taking down" for mistakes, or defective answering, or venial fault, is a mild Punishment on one side, and Reward on the other; yet it promotes care and attention, and helps to keep the class alive.

Holding places for a term, *e.g.*, for a quarter, or for the interval between one class-examination and another. Places would be allotted in accordance with the results of the quarterly examination, taken in conjunction with the "*conduct marks*" for the quarter; such places will have considerable value attached to them by the scholars. The plan thus becomes an effective instrument of discipline in the hands of a wise teacher.

(3) **Marks and Class Lists.** Marks for general deserving, and for special merit, may be made to produce a good effect.

The *tabulated results of* quarterly and other *examinations* are anxiously looked for, and carefully scrutinized by the elder scholars in a good school; this is sufficient proof of their efficacy as stimulants.

Honour lists for remarkable merit are, in their way, very effective.

It does good also, to *put up the names of a few boys who* do best, or who *distinguish themselves in weekly examinations* in Arithmetic, Writing, or other subjects.

Honourable prominence may be given to exceptionally good Home-lessons, Maps, Drawings, and Writing, *by exhibiting them* on the walls, or in a case in the room.

(4) **Offices of Trust**, such as keeping the mark-slate, getting books and apparatus ready, and employment as temporary monitors.

Simple as these appear, a teacher can make good use of them in school, and he who finds them inoperative has much to learn.

II. **Prizes, Actual, Tangible, Primary Rewards**, cannot be frequent. If given at all, it should be in accordance with the following principles :—

(1) *They should be within the reach of all.* Every scholar should be able to obtain them.

This is difficult to meet, though it can be done where the teacher is fully trusted. To take a practical case :—Suppose the teacher wishes to improve the character of the home-lessons; it will be better for him to offer a prize to the boy who "strives the most," or "who makes the most improvement," than to the boy "whose home-lessons are the best."

(2) *They should be given for real desert, or for positive merit only.*

Intellectual power, natural ability is not to be preferred to patient striving.

(3) *They should not be obtained too easily, nor be given too often.*

"Even a great reward, if it be customary, can be no reward,—and I know not whether we can call a thing great when it is common." "The being liberal of them is the ready way to make them none at all." (*Montaigne.*)

(4) *All should feel they are fairly distributed.*

The feeling of the class as to the fairness of the award will depend upon their estimation of the teacher's character. In order, however, to do away

with any suspicion of unfairness, the writer was in the habit of keeping a "*mark-slate*," and of entering in a book the number of marks which a boy obtained every day. He found this a most effective instrument of discipline, and he recommends the plan, with any needful modifications, to his fellow-teachers. An "*extra*" mark is a valued reward for a sharp answer, or for other merit, and to "*lose a mark*" is generally an effective punishment for carelessness or want of proper preparation. This "*mark-slate*" was ruled thus:—

Name.	Attendance.		Clean-liness.	Home Lessons.	Extras.	Deduct.	Total.
	M.	A.					

There was some trouble in getting the plan into operation, but it worked so well in the upper classes after a time, as to compensate tenfold for the trouble connected with it.

Irregular, inexpensive, unexpected prizes, such as a lead-pencil or drawing-book, may be given by a judicious teacher with good effect, and more frequently than the more expensive prizes.

Special rewards may also be given with propriety for special excellencies, such as regularity of attendance, punctuality, good conduct and even special or general proficiency, provided the general conduct of the recipient be good.

Punishments.—Laws are "imposed under a penalty for neglect or violation. The penalty is termed 'Punishment.'" (*Bain.*)

The institution which issues Laws and inflicts Punishment is "*Government*" or "*Authority.*" Punishment rather than Reward is relied on to secure obedience to Laws. Punishment must be the main sanction of Discipline.

Note. *What is said about Punishment here, is not to be taken as applicable to Corporal Punishment alone. Looks, Words, and other Secondary and Primary Punishments can, and should be used for the purposes indicated in the text.*

Objects of Punishment. (1) Reformation of the offender.

To this end, *he must feel that his punishment is just*, and that he is to blame for it. *The punishment must be severe enough to make an impression* that he may dread its repetition, and avoid the conduct which brings the punishment. *He should look on the punishment as a degradation.* "Shame at doing amiss, and deserving chastisement, is the only true restraint belonging to virtue." (*Locke.*) Conserve the feeling of "ingenuous shame" carefully.

Guard against the danger of the offender setting off so much punishment as a clearing off of so much bad conduct. An offender is not to be immediately reinstated in the position he would have occupied had he not offended. Let him rather work his way back to favour by striving to do his duty. "Put on a pretty cold brow towards him, and keep it till he reform." (*Locke.*) The teacher's knowledge of the lad will enable him so to regulate his bearing as to let the boy see that his attempts at reform are being appreciated, whilst the teacher, by his reserve, shows that the fault is not yet forgotten. This gradual restoration to favour as it is won, is a most effective part of the discipline of Punishment.

(2) **Example**, deterrent influence on others, *prevention* of similar wrong-doing by them.

Onlookers should feel that the Punishment is just; all should acknowledge that the conduct which brings the Punishment is wrong. It should *make an impression on the spectators*, that they may dread a similar infliction. It should *not be unduly severe, or it will arouse the sympathy* of the onlookers with the offender and provoke resentment in the minds of the scholars against the authority of the teacher, much to his future discomfort.

(3) **Retributive Justice**, the satisfaction of an innate sentiment that the offender gets his deserts. Watch this feeling, that it does not pass over to *Vindictiveness*, then Justice may co-exist with pity.

Be extremely careful never to allow any Punishment you inflict to bear the appearance of private revenge, or gratification of ill-feeling, or the expression of *personal irritation.*

Other principles connected with punishment. (1) *Punishment is to be inflicted judicially*, after all the bearings of the case are seen.

"There is no department of action within the school, where there is more need to shut off the chance of acting on momentary impulse." (*Calderwood.*)

Punishment should be a serious thing to all concerned. He who inflicts it should do so temperately, and without passion, "*never in anger, never beyond measure,*" although he ought not to be cold-blooded in the matter. "The passionate man always commits errors." (*Dunn.*)

Random Punishments are extremely harmful. Yet some teachers seem to have little method or principle in so vital a matter. It is a grave mistake to punish in rough-and-ready fashion, sometimes severely, sometimes lightly, or not at all, for the same fault. Inconsistent teachers invariably have to punish more frequently than those who bind themselves by principle, and the tone of their class or school can never be high.

(2) *Only such conduct as the child knows to be wrong is lawfully punishable.*

Faults ought to be looked at from the child's standpoint. Genuine ignorance in school matters is a valid excuse, until the teacher has removed the ignorance.

(3) *Punishment should come,* as far as may be, *as the natural consequence of an offence.*

Spencer enforces this point by appealing to Nature, which "illustrates to us in the simplest way, the true theory and practice of Moral Discipline." "It is the peculiarity of her penalties that they are: (1) Simply the *unavoidable consequences* of the deeds which they follow." (2) They are "*constant, direct, unhesitating,* and *not to be escaped;*" "*inexorable, not resentful:*" "*no threats,* but a *silent, vigorous performance.*"

If we could only produce the feeling that we are but the instruments of an *impersonal,* all-pervading power, which visits *every fault* with appropriate Punishment, our moral influence would stand higher, less strain would be put on the pupils' good-will towards us, and Punishment would have its fullest effect.

(4) *Punishment should be commensurate with, or be graduated to the offence.*

There are little sins against Discipline, such as restlessness and mild Disorder, into which children often fall, because of their very childishness. These are lapses rather than crimes, and whilst the teacher must contend against them lest they will develop into serious evils, yet he is not to treat them as heinous offences. We must not confound "what is inconvenient or annoying, with what is culpable."

"Faults of frailty, as they should never be neglected, or let pass without minding; so, unless the Will mix with them, they should never

be exaggerated, or very sharply reproved; but with a gentle hand set right, as time and age permit." (*Locke.*)

Comenius recommends *mildness* in the matter of studies, *severity* in that of morals.

(5) *Public opinion may make Punishment more severe, or may make it almost a sham.*

When a boy *gets no sympathy* from his fellows, when there is a general opinion that it "serves him right," his Punishment is always felt more acutely. Some such feeling always exists where Discipline is good and Punishment just.

The writer has seen a boy called out to receive one or two strokes with the cane, who has gone back to his place with an air of bravado, and has been met with the smiles of his classmates. *Such Punishment does harm instead of good;* the bad spirit in the class was ministered to by the style of correction; the teacher's judgment and method were therefore seriously at fault.

It is sometimes well to *obtain the expressed co-operation of parents.* How far this can be done is a matter of circumstance and judgment; it is not well to be fussy, and we must not put the parent in our place as disciplinarian of the school.

(6) *Minimize Punishment.* Avoid all kinds of Punishment as far as possible. "A maximum of improvement cannot be obtained without a minimum of Punishment." (*Bell.*)

(*a*) *Avoid, or obviate occasions for offence.*

Good Discipline tries to preclude the necessity for Punishment by preventing rather than correcting fault. Make proper arrangements; remove temptation. "Prevention is better than cure." "Punishment is inferior to prevention." "The scholar is commonlie beat, when the master was more worthie to be beat." (*Ascham.*)

(*b*) *Help good intentions.*

Encourage good conduct by showing your satisfaction, by providing abundant work, by making work pleasing and interesting, and by general kindly sympathy.

(*c*) *Stop evils at their commencement.*

Light Punishments are then sufficient; severity is not wanted.

(*d*) *Make Duty clear; then insist on its performance.*

Serious offences are less likely to occur in good schools, *i.e.*, in schools where Duty is clearly laid down, and then enforced with firmness and decision. It is in disorderly, ill-regulated classes and schools that Punishment is most frequent. Lax Discipline entails frequent Punishment, and is in reality a form of cruelty.

(*e*) *Certainty of Punishment is more effective than severity.*

Cultivate the feeling that detection is sure, and that Punishment certainly follows detection. Let supervision be thorough.

It is bad to be severe; *it is bad* also *to "let boys off,"* when they break rules or neglect their duty.

(*f*) *Cultivate a good tone.*

Getting public opinion on the side of law and order must be a work of time, patience, and consistent action. "Much depends on making every boy feel that you have in view only his good." (*Bell.*) If he be persuaded of this, he will *like* you, and be disinclined to conduct which is wrong, not only because it entails direct Punishment, but because it displeases you.

Then comes the possibility of reconciling in practice two leading rules which may seem irreconcilable: (1) *Avoid Punishment.* (2) *Punish every form of wrong-doing and default.* Carrying out the second rule is one of the surest means of succeeding in the first. But it is only when there is good-feeling between teacher and pupils, that looks, words spoken in private, and other refined Punishments become powerful. The teacher can then be forbearing, and can make allowance for frailty, and keep a high standard before him, and press all constantly towards it. It must be confessed, that *the standard here indicated can scarcely if ever be fully reached*, especially in elementary schools, though it should be continually aimed at. But if we form false or inflated notions, and then act upon them as though they were true and sound, we shall be bad disciplinarians. *Government can be mild only so far as tone is high;* yet mild government helps to create high tone.

(*g*) *Try to do without it*, as far as you possibly can.

We shall never be able to abolish Punishment in some forms, but we can reduce it, and improve its quality. We may be able to substitute a light and refined Punishment for one that is severe and coarse, and the teacher may rejoice if he can make private remonstrance as effective as caning used to be, or if he has reduced the number who are kept in, whilst he has maintained the school-standard. *It is well for the teacher to regard the necessity for Punishment as indicating a degree of failure in*

disciplinary power on his part; this may be unreasonable in one sense, but it would serve as a useful check.

Punishments available in school. Punishments may (1) involve simple *shame or disgrace*, or (2) bodily discomfort or *pain may be superadded.*

I. **Secondary Punishments** owe their efficiency to the *shame* connected with them.

In practice, these must be *the chief everyday sanctions* of Discipline.

The leading Secondary Punishments we have to rely on are—(1) **Rebuke, Reproof, Blame**, these must be our main resource. "On the delicate handling of this instrument depend the highest refinements of moral control." (*Bain.*)

Rebuke may be conveyed by manner or in words. An *altered manner* may vary from a delicate reminder to a severe reproof.

Private remonstrance is the most rational weapon in the teacher's armoury, and might with advantage be more frequently used.

Scolding at large seldom does much good; it does not come close enough to the worst offenders, and is unjust to the rest. Yet it is not without its use as a general stimulant, if it be deserved, and if it be rare.

Reproof should never be intemperate; unreasonable blame defeats its own purpose. "Chide not hastilie; monish gentlie." (*Ascham.*)

Blame, like praise, *should be sparingly used*, and be *awarded justly*, even in little things. Ordinary lapses may be adequately met by a look, a nod, a word, or a change in manner. Sometimes it is necessary, however, to *assume an attitude of righteous indignation*, and to *reprove with sternness.* At such times, weigh your words well, let it be seen that though you feel strongly, your words and actions are under full control.

Ridicule is a form of dispraise, which it is difficult if not dangerous to meddle with. Yet a teacher who has wisdom and tact, and who has studied his scholars well, may stir a healthy laugh at a foolish answer, or as he exposes some silly freak, or at the expense of a well-opinionated simpleton; but it requires rare tact to do this.

(2) **Losing marks**, withholding or deducting marks, and giving bad marks.

These can be utilized in many ways, and with excellent effect. A dishonourable position in the class-list is keenly felt by some scholars.

(3) **Places or postures of disgrace,** such as causing a boy to stand on a form, or behind his class, or in a conspicuous place in the room.

This very common, if not too-frequent, form of Punishment, *owes its force pre-eminently to the disgrace the teacher contrives to attach to it.* To make it a real Punishment, shame must come in. It is one of the severer Punishments in junior classes; and in good schools, where tone is good and Punishment rare, elder scholars also will feel this form of disgrace acutely.

We sometimes see children made to stand with a label, "bad boy," hung on their necks, or made to kneel in a corner, or take other positions which need not be mentioned. Any justification of these would lie in the additional disgrace, and, perhaps, in the added element of discomfort; but they can not at all be recommended. Certain antiquated and ludicrous Punishments of this nature (*e.g.*, some employed by Lancaster) have now fallen completely into disuse.

(4) **Tasks and Impositions.** Different opinions are held respecting the advisability of using these as Punishments.

Defaulters should make good their default; so far all, or nearly all, would be agreed. It is only fair to make a boy finish his lesson in his playtime, if he has neglected to do it at the proper time.

But should tasks be set as a penalty for some other form of wrong-doing? Many hold that dislike to learning is produced, if study be made a Punishment. Stow was of this opinion. Fitch warns teachers against the practice. Gill thinks "nothing more unfortunate was ever conceived; that with which should be associated feelings of pleasure, being made an instrument of pain."

Tasks, however, *are* commonly imposed as *Punishments for*, *and correctives of neglect, carelessness, and inattention;* they associate disagreeableness with these evils, and make them relatively more unpleasant than painstaking concentration of power on Duty, even if Duty be distasteful. The opinion of the eminent educationalists, given above, expresses the most modern ideas on this point and is agreeable to the experience of all practical teachers.

A very objectionable form of such tasks is the imposition of hundreds of "lines" to be written.

II. **Primary Punishments,** in which bodily discomfort or pain is added to disgrace.

(1) **Detention after school hours, or during recess,**

may take two forms: the delinquents may be required to remain perfectly still, *or* tasks may be imposed on them.

Compulsory stillness is the "characteristical" Punishment for riotous and unseemly conduct. (*Bain*, "*Education as a Science.*") It is a suitable infliction for carelessness at drill, or restlessness during class-work; it may be made a species of *solitary confinement*. (*Landon.*)

Detention with tasks is the proper Punishment for non-preparation, or insufficient preparation and laziness. If a boy misses his work through lateness, he may fairly be kept in to do it.

There must be careful supervision in both cases. One of the evils of detention is that the teacher is also detained.

N.B.—Never keep a boy without his meals. Let him get away in time for dinner, even if you detain him at another time to complete his punishment. If for some sufficient reason this may not be, see that he has a meal brought to him. Physiological wants should be attended to.

(2) **Corporal Punishment** has always been employed for *teaching* Duty, and *correcting* wrong-doing in schools.

Formerly it was frequent, and almost ferocious. Now teachers are trying to do without it, and though they have not succeeded up to the present, yet they are lessening from year to year what Locke calls the "lazy and short way" of government. Some teachers may still use it too frequently, but, on the whole, it is less common, and far less severe than many suppose.

Teachers would generally agree that "beating is the worst, and therefore the last means to be used in the correction of children."

Yet "the evil of corporal punishment is less than the evil of insubordination or disobedience." (*H. Mann.*)

Many, if not most, teachers have endeavoured to govern their schools without corporal punishment; comparatively few have fully succeeded hitherto.

Stow is said to have made two rules for himself: (1) *Never to strike*, (2) *Never to expel.* "Nothing," says he, "so certainly compels a master to train, as the feeling he should not strike." Mr. Langler, in *The Schoolmaster*, of 16th June, 1883, says, "From the date of the establishment of the schools attached to the Normal Seminary, Glasgow, to 1845, when I left that institution, the cane had not been used for corporal punishment. During my own course of training no such instrument was ever seen, and

several succeeding generations of students who have passed through the same halls, can bear similar testimony. 800 children were under a discipline, of which caning formed no part."

Whether average teachers will ever be able to deal effectively with average boy-nature without inflicting bodily pain, is a matter on which there is just now great difference of opinion. *But the direction in which we should look, and the goal at which we should aim, are clear enough.*

Assuming the necessity of occasional Corporal Punishment, we notice further :—

Its special *danger* lies in the ease with which it can be applied, and in its immediate effectiveness, though *these are often urged as arguments in its favour.*

The teacher would do well to *keep a check upon himself*, such as entering the names of those who are punished in a book, and noting their offence.

Do not carry a cane; keep it out of sight as far as possible.

Never strike a boy *with a ruler*, or hard unyielding instrument; on the whole a cane is perhaps the best.

One or two *stripes on the hand* are almost always enough; the teacher can then see whether any lasting marks are made.

Physiology warns us *never to strike on the head*, and *never to box the ears.* Even a gentle admonitory tap had better not be given.

Different opinions are held as to the advisability of inflicting Corporal Punishment publicly, and immediately on the offence, or privately, and after an interval.

Corporal Punishment in public, and at once, (1) must be *exemplary*, and, as a rule, more severe than private punishment; (2) produces a *powerful and immediate moral effect*, and is a forcible lesson on the evils of wrong-doing; (3) *is sometimes best*, but the teacher must judge when this will be. Wilful misconduct of a gross kind, vice, pronounced carelessness, insubordination, impertinence, presuming on one's forbearance, may have to be met in this way. The single stripe which some use to enforce care in smaller matters, such as drill, and other forms of doing, may usually be given at once. (*Note* that this is where Corporal Punishment is most open to abuse.)

Corporal Punishment in private, and after an interval, (1) *spares the boy's feelings* so far as may be, helps to "conserve the feeling of ingenuous shame," and does something towards refining a Punishment essentially coarse;—(2) the *teacher is calm and temperate* (though not unfeeling), and the *judicial character* of the Punishment appears more fully;—(3) *the*

offender has no temptation to assume a mock heroism, it is a serious blow to a teacher's authority if a bold boy resist him, and a struggle ensue: the chances of this occurring, and its damaging effect if it should arise, are minimized when there are no onlookers;—(4) *a lighter punishment* than would otherwise be needed as a deterrent example *may almost always be inflicted*, and if the teacher's manner be sufficiently judicial, there will be little danger of the boy assuming a "don't-care" air, when he returns to his class;—(5) on the principle "*omne ignotum pro magnifico*," private punishment will have its effect on those who do not see the infliction, especially if the boy comes back subdued.

Whilst it may be necessary at times to make Punishment public, yet it is best administered privately, even though it entails some amount of personal inconvenience.

Most disciplinarians are agreed that Corporal Punishment is appropriate for:—

Vice; deliberate falsehood, cruelty, bullying, and the like.

Habitual Carelessness; after other remedies have failed.

Obstinacy; "Stubbornness, and an obstinate disobedience, must be mastered—with force or blows; for this there is no other remedy." (*Locke.*)

Wilful disobedience; deliberately breaking well-known laws.

Even here, however, there *may* be a possibility of avoiding it.

Does the offender really know the gravity of his crime? Have we exhausted other means of causing him to know it? *Is Corporal Punishment* not only the readiest, but also *the highest available means* of awakening the culprit to a proper sense of his crime? *Is the school tone good enough*, or *is the teacher strong enough* to deal with obstinacy and disobedience in any other way?

The Law. Opinion of the late Lord Chief-Justice Cockburn.

"By the law of England, a parent or schoolmaster, who for his purpose represents the parent, and has parental authority delegated to him, may, for the purpose of correcting what is evil in the child, inflict moderate and reasonable punishment, always, however, with this condition, that it is moderate and reasonable. If it be administered for the gratification of passion or of rage, or if it be immoderate and excessive in its nature and degree, or if it be protracted beyond the child's power of endurance, or inflicted with an instrument unfitted for the purpose, and calculated to produce danger to life and limb, in all such cases the punishment is excessive, the violence is unlawful."

Junior Teachers and Corporal Punishment. Juniors have a right to call in the aid of the head teacher when they need it; the head teacher, however, must be the judge when and how he should interfere.

Try to keep the discipline of your class in your own hands. Resolute effort on your part will do wonders, and you are by it preparing yourselves to become good masters. The writer has known pupil teachers who have maintained a high state of discipline by simple expedients, such as taking the names of about six of the boys during the morning, and allowing these boys to go home five minutes before the bulk of the class, and by keeping the six most careless boys for a time after their classmates have gone.

When children are unusually troublesome, or when you have one or two distinctly unruly boys, it is natural that you should be vexed, and that you should feel you could do much better if you might use a cane. It is enough that *you are forbidden to strike* a child at all. *Never allow yourself to be betrayed into breaking school-rules* by taking any form of Corporal Punishment into your own hands; *avoid even touching the children.* Nothing lowers a teacher more, in the estimation of his class, than breaking rules in an underhand way, such as rapping knuckles, boxing ears, and so on.

Do not resort to ill-considered forms of Corporal Punishment. Some show a "baleful inventiveness" in causing boys to hold slates or weights, to kneel on an angular piece of wood, or to take other uncomfortable positions. Such punishments may produce permanent physical injury.

School-boy faults and their correction. No minute rules of universal application can be given. Boys, schools, and teachers vary. All that can be done is to indicate broad plans, which each teacher must interpret in detail for himself.

When a school is in a bad state, the seeming temporizing which will be sometimes recommended, might be taken to augur weakness; coarser methods might then have to come in at once.

Where tone is good, and the teacher strong, forbearance may be pushed to an extreme.

Teachers vary greatly in their standard of Order, Punctuality, and other things. A *high standard* should always be taken; the best men have also a *progressive standard;* they are constantly reaching forward to something better.

N.B.—**The hints and recommendations which follow are generally suited**

to boys above the middle of the school. Younger children are more easily swayed, though their faults can be dealt with on the same principles.

Two essentials *have to be satisfied in all true correction.*

(1) *The offender must see that he was wrong, and wherein he was wrong.* This amounts to putting him right, or letting him know his duty for the future. Unfortunately, *knowing* one's duty is no sufficient guarantee for *doing* it; people do wrong, and fail to do right, though their eyes are open.

(2) *Induce the offender to try to amend.* If you can do this without Punishment, so much the better. *The mildest efficient means is the best,* even when Punishment cannot be avoided.

Inadvertency, Want of Thought, Heedlessness, is a marked failing in children.

Forgetting home-lessons, blotting copy-books, transcribing incorrectly, making needless omissions and mistakes, leaving caps and books in wrong places, and many other things might be instanced. Venial *carelessness* in such matters *will soon pass into more culpable negligence,* unless it be checked. Besides, much of the comfort and success of school-work depends on due performance of little duties. *Make Duty clear. Set a good example. Fight constantly, kindly, and with discretion.* Punishment for this class of fault will seldom pass beyond detention.

Unpunctuality is sometimes very common.

Some teachers seem to look on lateness as unavoidable. Others have almost banished it by steady pressure. *Detention is the fairest corrective,* and defaulters may well be set to do the lesson they missed.

Every member of the school staff ought to be at school some minutes before school begins.

Idleness is usually owing to bad management.

If children are in good health, and the class be well taught, this fault can scarcely be serious. Fellenberg remarks that Indolence is so contrary to the natural disposition of children, that it can only originate in bad teaching or constitutional defect. "Yet the half of school-punishment is to compel Attention!"

Teach well. Give children plenty to do. Press any who attempt to shirk their work.

Detention and tasks are appropriate punishments for real laziness, but sometimes the lazy boy may need awakening by bodily pain.

Bad Manners include many forms of fault. Sometimes they

are found in school, though there their grosser forms, at all events, would be promptly checked. Outside, where supervision is often impossible, and where, as many hold, the teacher has no authority, they are frequent.

Vicious, or defective home and outside training is answerable for almost all the bad manners in our scholars; it is not fair to charge the fault to the school or the teacher.

The boy wishes to be thought a man; his way of showing his bigness is often to do or say what is daring or saucy. His self-assertiveness, coupled with his desire to be looked on as a hero, leads many a boy much further than he would otherwise go.

Mere *animal spirits and thoughtlessness* often betray children into forms of bad conduct.

The teacher's duty is to *inculcate and insist*, so far as he can, *on considerateness, courtesy*, and other social virtues, and to *discourage all forms of rude language and behaviour*, both in and out of school. He should give little *lessons on minor moralities*, and enforce and illustrate them by stories, and examples from what he sees and hears in the playground and street. He may fairly present the boys' false heroism in a ludicrous and altogether unheroic light; he should dwell on the selfishness and folly involved in rudeness, and on the easy yet genuine pleasure felt on both sides, when one is kind, and courteous, and well-behaved.

Bad Language is sometimes heard from children who are not fully aware of its wickedness, and sometimes from older children with fuller knowledge, but who take this way of showing their manliness. It is always a serious evil, and prepares the way for further evil; it must therefore be dealt with in a decided style. *Teach children that it is wrong to talk profanely, obscenely, or indecently;* great caution will be needed in this, that modesty and delicacy be not shocked, whilst the evil is put in its true light. *Watch the school walls, fences, and outbuildings, and erase any writing at once. Enlist the co-operation of elder scholars* as far as you can. *Supervise children when at play*, when they reveal themselves most freely. *Wilful offence*, against light and knowledge, *ought to be punished severely.* The whole question is extremely serious; the state of the school morals may be largely gauged by the language of the playground, and the presence or absence of objectionable marking in the out-offices.

Wilful and wanton damage should be paid for; whether any further Punishment is needed, will depend on circumstances.

Throwing stones gives the school a bad name, and brings endless complaint. It can be dealt with and prevented in the playground, but there is much difficulty in going further. Our main resource must be to *point*

out the probable ill-consequences, and then appeal to the boys' better nature.

General misconduct out of school must be dealt with discreetly. We cannot supervise our scholars then, and cannot therefore be held responsible for what they do. We can, and should teach what conduct is good, and what is bad, and try to enforce our teachings by all the motives we can fairly use. But after children are away from school, they are properly under their parents' charge, and we should exceed our powers, and might put ourselves in an awkward position, if we were to punish wrong-doing outside. We may remonstrate and reprove, but our proper authority stays there. Some of the teacher's greatest annoyances are consequent on his inability to deal fully with this matter.

Petulance, Hasty Temper, often hurries a boy into actions he would never be guilty of, if he had learned to control himself.

The proper corrective is to *cultivate self-control*, and to *make exhibitions of the fault invariably unpleasant in their consequences*; make the offender ashamed of himself, usually by private remonstrance.

Send the boy to a room by himself. After an interval, go and talk with him. The probabilities are that he will cool down in a few minutes. Point out to him the necessity of being on his guard against falling into this fault for his own sake. Also let him see that it cannot be tolerated in the interest of the school. This will generally be sufficient.

Sullenness is a difficult matter to deal with. *It must not be tolerated*; either in the interests of the boy or of the class. "Sulks" may easily be pushed beyond passive resistance to active rebellion; neither attitude is at all allowable.

Good results will accrue if the following plan be adopted. Set the boy apart from his fellows, or send him to a private room. After a time, go to the lad, speak seriously about the fault, try to get him to see it in its true light, and tell him that it cannot be allowed in school. Advise him to be watchful and careful for the future, and show some little forbearance if the fault should appear in an incipient form again. (*Bad habits, and especially bad temper, cannot be fully corrected at once*; some allowance should be made, especially if the boy is trying to amend.) Help him with looks, and manner, when a hint is needed; mild sulks may even be passed without apparent notice, and the boy be worked back into a better frame of mind. If, however, it again becomes pronounced, and takes the form of rebellion, there is nothing for it in ordinary schools, but falling back on Locke's treatment for Obstinacy, but, as advised below, this should be well "within measure."

Stubbornness, Obstinacy, is a more pronounced evil, and cannot be allowed.

"*Be careful that it is Obstinacy.*" (*Locke.*) Timidity, fear, and other causes may simulate the active evil. *Get the boy to see or know that it is wrong and not allowable;* private remonstrance would be best for this. *If, knowing himself to be wrong, the boy be still defiant, he must be made to yield, or go.*

Gill recommends punishment for the disobedience, followed by enforced idleness for a lengthened time. If the boy be disobedient then, repeat the treatment; if the disobedience be further continued, send the boy home, rather than "chastise him till he yields."

In bad cases, *the co-operation of parents may well be sought.* These are the cases also in which *there is danger of excessive Corporal Punishment.*

Petulance, Sullenness, and Obstinacy are faults of temper, and require delicate as well as decided handling.

Petulant hastiness is most frequent, but none are common in a good school. We should *be careful to avoid inducing them.* Equable and equitable government, self-control, and kindly manner will do much to banish them.

Disobedience, Insubordination. *Direct insubordination,* or active disobedience, *can hardly exist in a good school;* it would be completely foreign to the place, and the offender would be out of harmony with his fellows.

A new scholar might try it. If so, the boys will be surprised, and the teacher *may* seem surprised also. *Perhaps* he may be able to deal with the case by calmly setting the offender aside, and by pointing out the bearing of the other scholars, and the necessity for obedience, bring him to a proper state of mind. In any case, *Disobedience cannot be tolerated;* if obedience be not rendered voluntarily, it must be enforced.

Should any old scholar dare to be insubordinate, the *simplest* plan is to cane him smartly at once. Yet *there may be a more excellent way,* if the teacher be man enough to touch the boy's better nature, without being suspected of weakness by the boy or his fellows.

Impertinence also can scarcely be serious in a good school.

The general plans for dealing with it are the same as those just mentioned.

Note the necessity for being guarded in dealing with faults of temper,

and with those named afterwards, *that children may not imagine they are punish ed for annoying you, but for doing wrong.*

Truancy usually has the element of *Deceit* prominent in it. Sometimes, however, little children stay from school without any very wrong feeling. Each case has to be dealt with on its merits.

Parents are often greatly to blame for their children's unauthorized absence. *Teachers can prevent a good deal of truancy* by communicating with parents when children are absent. Co-operation will do very much.

Teachers ought to point out the wrong connected with the practice, but *Punishment ought to be undertaken by the parents.*

Bullying, Cruelty toward weaker children.

Public and immediate infliction of pain is generally the most appropriate corrective for this cowardly fault. Even this evil propensity has its degrees, and in dealing with it, the disciplinarian has to consider how far gratification of the sense of power is complicated with the tendency to Cruelty. The meaner natures, who have to be dealt with in this matter, are, as a rule, best taught that their conduct is wrong, and that its consequences are evil, by being made to suffer pain themselves.

Lying, Deceit, Prevarication, and other forms of **Dishonesty.**

Falsehood and Prevarication are resorted to by boys, that they may save themselves from the consequences of their shortcomings and misdeeds. It is often difficult to *get children to see this fault in its true light,* and this is the primary desideratum. The main point is to *lead pupils to form a proper estimate of the meanness, cowardice, and wickedness of the vice.* To bring this about, the *teacher should show that he is shrewd enough to detect* falsehood and prevarication, or that he is *not to be easily deceived.* He should so deal with his pupils, as to lead them to feel that *candour and ingenuous truthfulness even pay best* in the long run; *open confession should be magnified* as honourable, even if it do not make full amends for the fault. *Children should feel they are trusted* and believed, until they give occasion for opposite treatment. *Lessons* should be given in which the evil consequences of lying in its various forms are dealt with, and the corresponding good results of truthfulness dwelt upon; these lessons may be illustrated and enforced by examples from daily life and school experience, as well as by the precepts and examples of the Bible. *The teacher should be a pattern* of the strictest integrity and straightforwardness.

Copying is a common form of practical deceit. *Prevent it* by suitable

arrangements, and by the most thorough supervision. The *meanness* of the practice should be pointed out. Its *unwisdom* also should be shown; for if it succeeds, the teacher is led to think boys know or can do more than is really the case, and he may therefore pass over what he would necessarily explain, and require more than he otherwise would.

Dishonesty in other forms is not infrequent, such as *petty larceny* of pencils, pens, playthings. Point out the evil; teach children that such practices are *stealing*, and the boy who commits them is a *thief*. Public opinion is easily roused in this matter.

If a boy knows that falsehood is detestable, and that honest confession will be esteemed as the first step towards amendment, and is then guilty of deceit, he ought to be severely punished. But unless a boy really feels that the vice itself is degrading, corporal punishment should scarcely be resorted to except as a means of leading him to look on it in its true light. The whole subject is extremely serious, and it is impossible to lay down an invariable rule, which shall be applicable in all cases, and with pupils of varied temperaments.

CLASS TEACHING. (Preliminary.)

Good work. In all teaching worthy of the name, there will be:—

1. (*a*) *An* **ideal** *in the teacher's own mind;* knowing what to aim at; understanding what his pupils are, and what they need, and then starting with a well-considered and definite purpose.

(*b*) *Clear* **presentation** of what has to be done or learned; putting things well; skilful employment of such devices as will make all plain.

2. *Honest, painstaking* **effort** *on the part of the* **pupils.**

Or, the children are led to see exactly *what* is expected of them, and *how*, they may satisfy their teacher. Such pressure and insistence as will cause them to *put forth their best effort* is also brought to bear.

The formula, "*Let the child know* (1) **What** *to do, and* (2) **How** *to do it, then let the teacher* (3) **See it done,**" summarizes the essentials of practical teaching. Good class-work lies in applying this formula intelligently.

Tests. *The prime test for teaching* is its effect on the pupil, its *reality.* Next in order stands the *mode* in which results are obtained. (1) *Does the teacher teach?* (2) *How does he teach?*

(1) **Reality.** The teacher gets work out of the children; he causes them to use their powers as he directs. *Knowledge is made more complete;* the quality and quantity of information gained is satisfactory. *General intellectual force is increased;* faculty is developed, because the powers are used judiciously. What is learned is assimilated, made ready to hand, available for the purposes of life; the "knowledge is power."

(2) **Method.** *If interested attention be secured* throughout, method cannot be far wrong. Guard against doing too much

or too little, and against expending force wastefully, or in wrong directions.

In a good Reading lesson, every pupil knows what he is about, and tries his best to read according to the teacher's pattern, or according to his idea of the teacher's wishes.

In a good Writing lesson, the teacher causes each child to aim persistently at producing script characters, whose every stroke shall be a faithful attempt to reproduce the copy.

In a good Arithmetic lesson, each scholar is taught how to deal with the example, and what to aim at in shaping the figures, ruling the lines, and arranging the work. Each will then do his best to obtain the required result, honestly, quietly, quickly, and by a good method, and will strive to meet his teacher's wishes fully in the collateral work.

In a good Collective lesson, every pupil pursues the road which the teacher has mapped out, observes, reflects, and receives information, and after using his intellectual faculties under direction, carries away the knowledge the teacher had pre-determined to impart.

Learning and Teaching.—Learning. Whenever a person learns anything, it is in consequence of **his own** act; he learns because he devotes *his own* energies to it.

What the pupil does is the essential factor. Good teaching causes the learner to use *his own* faculties.

Not a little of what passes for good teaching is in reality a failure. Earnest talking, careful explanation, and hard work generally, may not constitute good teaching; *all goes for nothing, if the children do not use their own powers. Test your success by what you get the children to do, and not by what you do yourself*, except so far as it enables you to get work out of them.

Teaching.—The teacher's business is to **cause the pupil to learn.** *Any action which secures learning is teaching.* His part consists in finding out the *proper thing to be learned or done*, and in so *presenting* it as to *induce the child to put forth his energies* to learn or do it. His function is *to obtain interested attention, to arouse, stimulate, or move the learner's mind to action, to superintend, direct, and maintain its action*, as well as to *provide suitable material* for it to act upon.

Or, it is for the teacher (1) to make the immediate duty or object of

pursuit clear—"*What to do;*" (2) to make work possible, if not easy,—to enable the pupils either to follow his lead directly, or to proceed on a semi-independent course, in a road which will conduct them to the result he wishes—"*How to do it;*" and (3) to get the work or duty done, to supply adequate motives to due exertion, either by alluring and enticing the pupil to strive by making the pursuit attractive, or by forcing him to work through dread of unpleasant consequences if there be shortcoming—"*See it done.*"

Leading marks of good class-work. (1) **Sympathy and co-operation** *between teacher and pupil.* Both work for a common end, the good of the child. The teacher thinks, contrives, and maps out a course for the pupil; the pupil responds, and works for himself on the lines laid down by the teacher.

Pleasure and *kindly feeling* are called forth on both sides, *activity* is promoted, and mutual duty made attractive as well as successful.

(2) **Adaptation.** Work is suitable, and method conforms to child nature.

The teacher *comes down to the child's level,* and starting from this point leads him on **step by step**, making each onward movement reasonably easy, but always obliging the child to try for himself. Aims and methods are *fitted to the child's needs and powers.*

Simplicity is a form of adaptation, coming usually as a result of watchful practice, which schools the sympathetic teacher into appreciation of the learner's difficulties, and guides him to good methods. "*Simplicity is the last and highest acquirement of the teacher.*"

Variety, absence of monotony, is another leading feature in adaptation, and an essential to proper dealing with children.

(3) **Soundness, Thoroughness, Finish.** Good teaching deals loosely with nothing; it leaves nothing incomplete, indefinite, or obscure.

To satisfy these conditions, there must be ***thoughtful selection*** and ***arrangement***, short, adequate, exact, forcible, ***clear statement***, simple, apt, ***abundant illustration***, much varied ***repetition***, and careful linking or ***association*** of new knowledge with old.

Each part is made clear, and implanted firmly as the lesson proceeds. **One thing at a time**, and that dwelt upon, and **not left until it is comprehended.** "Sound progress is almost always slow progress." *Time*

must be given to make each step sure, that it may afford firm foothold for further advance.

Introduce and attempt to deal with *only so much as can be well handled* and driven home. *Abstain from needless detail;* to overload a lesson is to overweight the pupils, and produce obscurity and haziness; the teacher also hampers himself, by introducing difficulties which may be avoided, or possibly sets himself the task of attempting to do more than can be done well in the time.

"A lesson may be *offered*, but it is never *given* until it is *received*." (*Stow*).

(4) **Intelligence.** Pupils **understand** what they do. *Good teaching helps the learner to form correct, clear, and definite* **ideas.**

Children can repeat definitions, rules, and strings of words, or may say what their teacher says quite accurately, and yet not truly know what they say. Teachers cannot be too strongly impressed with the cardinal fact, "Knowledge consists of *Ideas*, not of words." Ideas are the proper furniture of the mind, and the order in teaching is, **Ideas first, then words for them.** "If he that [uses a word] cannot frame any distinct idea of [what it stands for, the word] is certainly to him a mere empty sound, without a meaning, and he learns no more by all that is said of it, or attributed to it, than if it were affirmed of that bare empty sound." (*Locke*).

Examples and illustrations should come before rules. Everyday experience shows us that a new rule or definition has to be "explained," or "illustrated;" stating it in words is not enough; it is not until the *examples* are brought in, that the rule is apprehended, or its meaning grasped. Whence the natural order is evident; **examples**, *facts, particulars, what is concrete first,* **then rules,** *formulæ, generalizations, and what is abstract.* Definitions should be learned *after* their meaning is seen; **understand first, then commit to memory.**

And generally, the proper order of procedure is "**Begin at home,**" *i.e.*, with what the child already knows, or with things on which his ideas are already clear and sound. "**Link new to old,**" *use* **what is known** to *introduce, explain, and fix* **what is not known.** Proceed from **simple to complex, concrete to abstract, example to principle, facts to rules and generalizations.**

(5) **Universality.** Good class-teaching leaves no one out, it *reaches every child;* the individual learner feels himself brought into direct personal contact with his teacher.

Every scholar should be possessed with the idea that his teacher sees

him, and is teaching *him*, and that *he* must make responsive effort. If any child get a notion that he is left out, or that it does not matter much whether he work or not, or if, indeed, he neglect to do his best, this is a sign that insight, or force, or tact, or some other essential is wanting in the teacher.

(6) **Moral effect.** Good class-work combines pleasure with profit, *makes duty pleasant*, and promotes happiness. It is a hopeful, though not always a reliable sign, when children are pleased with their lesson.

Work itself is a pleasure, when natural activity finds something congenial to exercise itself upon.

Good teaching goes far to *make school a happy place*, by making school exercises *attractive*. With little children especially, class-work ought to be organized play. "Cheerfulness or joyousness is the atmosphere under which all things thrive, especially the young." (*Jean Paul Richter.*)

Work with an object in view, or working to a definite end, systematises the activities, and enhances the pleasure of using them. There is intellectual gratification in contriving and noticing the *adaptation of means to ends* (as in solving a problem. or even writing a copy) in estimating their force, and in watching the gradual approach to the goal, and finally gaining it.

Difficulty felt at first, if ultimately *overcome*, enables the conqueror to experience the pleasure of victory.

If it be felt that the new exercise or fresh *acquirement* is or will be *useful*, there is a further gratification.

Doing anything well satisfies the æsthetic likings, and is a source of refined pleasure.

Above all, the *consciousness* of having done one's best, *of duty done*, is a pleasure of the highest type.

A good teacher. Apart from higher moral qualifications and aims, a good teacher is distinguished by certain gifts, acquirements, and aptitudes.

Clear-headedness. A distinct idea of what he wishes to teach, and of what he wishes the class to arrive at, is always present to the good teacher. Want of such definiteness leads to random, unintellectual teaching.

Logical faculty, that he may perceive the relation existing between the parts of an extended whole, and may arrange them accordingly.

Sympathetic insight, and knowledge of children, perception of what they are, what they need, and what they can and cannot do.

Power of adapting himself to his pupils.

Command of words; ability to say simply what he wishes, and to make himself easily understood.

Ability to awaken *interest*, maintain *attention*, and keep *order*.

Decision, thoroughness, determination to drive his instructions home, to get his ideas carried out, and to make everyone do his duty.

An *animated*, pleasant, inviting, yet magisterial *style*.

Full knowledge of his subject, extending far beyond the probable immediate requirement. Without this, a teacher is likely to be embarrassed by something unlooked for, or to find himself out of his depth.

General tact and good sense in choosing matter, in handling the class, in dealing with circumstances, and in bringing all his resources into action as need arises.

Suitable physical qualifications; good health, sharp sight, and ready hearing.

Object of Education.—Education aims at the "*harmonious development of faculty.*" It tries to cultivate all the powers, in the best way, so as to secure the proper unfolding of each at the proper time.

"You do not educate, unless you educe the whole humanity." (*Whewell.*)

Practical Education includes **Instruction** and **Training.** The idea of *growth*, or of *natural development* is also involved.

"The process of Education consists in training faculties and communicating knowledge." (*Combe.*)

"Forge as well as furnish the mind." (*Montaigne.*)

I. **Instruction** is the process of building up (Lat. *in-struere*) or *furnishing the mind* with information. It *supplies* material from without, and *arranges* it in order within.

Immethodical or purposeless dealing with a subject stands in the same relation to true instruction, as a random heaping together of stones and wood does to building a house. *Purpose, plan* is essential; *selected* material has to be *arranged* and *fixed*, each part in its proper place; fact must be added and strongly fitted to fact, each in due order.

"**Cramming**" is a spurious form of instruction. Whenever

a teacher thrusts *overmuch* matter, or matter of a *wrong kind*, into the mind of the pupil, he is guilty of this fault. The material is forced on the memory, without securing adhesiveness.

[The word "cram" is often used dyslogistically, and without good reason.]

In true instruction the mental food is assimilated, and gives increased intellectual power. In cramming, the mind is surfeited with ill-arranged or indigestible facts; these render it confused, and dull, and unable to use the material forced upon it. Knowledge thus gained is soon lost; it gives no power.

Even when material is suitable, the mind can receive it only in small quantities at a time. Knowledge must be *instilled*, drop by drop. "Precept upon precept, precept upon precept; line upon line, line upon line; here a little, and there a little." (*Isaiah* xxviii. 10.)

II. Training, Education proper. In its *active sense*, Education is the process of leading out, or drawing out, or unfolding, or developing the learner's powers by exercising them aright.

All good educative means and methods are summarized in the precept, "*Provide suitable exercise.*"

The educative *process* is the correlative or complement of instruction. One communicates knowledge, the other cultivates and develops the activities of the learner, rouses him to self-exertion, and makes the knowledge "part of the organic life of the mind." (*Fitch.*) One supplies material, the other brings the learner's intellect to bear upon it, and enables him to use it.

"I must regard the main duty of a [teacher] to consist not simply in communicating information, but in doing this in such a manner, and with such an accompaniment of subsidiary means, that the information he conveys may be the occasion of awakening his pupils to a vigorous and varied exertion of their faculties." (*Sir W. Hamilton.*)

Method is radically unsound, whenever the teacher offers knowledge to the pupils without first seeing that they are ready for it, or without first preparing them to receive it, by stimulating their minds to action, stirring them with a desire to know, and prompting them to work for themselves. "To sit as a passive bucket, and be pumped into, can in the long run be exhilarating to no creature." (*Carlyle.*) "Self-activity is the indispensable condition of improvement." (*Sir W. Hamilton.*)

Sound method recognizes and provides for both essentials;

good teaching has two sides, **Instruction**, or giving information, and **Training**, or causing the learner to reproduce, and getting independent work from him.

A sharper line than really exists has been drawn between Instruction and Training, partly because they have been spoken of as *Processes*, and partly to call attention strongly to the twofold nature of the teacher's duty. *The two cannot be absolutely dissociated; one cannot be used properly without involving the other; both train faculty, though in different ways.* Instruction is a means of training, for it exercises the associating powers and the memory, and thus strengthens and develops them. Education in its turn, if it be well conducted, always leads to the acquirement or fixing of knowledge.

Some subjects are mainly *instructive*, *e.g.*, history, geography, and lessons of general information. Others are mainly *educative*, *e.g.*, grammar and geometry. In others the two functions are, or may be more closely interwoven, *e.g.*, reading, writing, and arithmetic, although instruction must be pre-eminent in *teaching* them.

But **every school subject may** in its measure **serve both purposes**; it has a value as *knowledge*; it may have a value as *training*, if the teacher can use it aright.

METHODS.

The Teacher's Tools.

Methods are like tools. Some can be used at every turn, but as a rule, each is best fitted to do a certain work, or achieve some particular result.

The value of a method lies in the way it is used. "Every method has *some* good in it; no method is *all* good." (*Voltaire.*)

One man will do good work with a tool; another will bungle, spoil his material, perhaps hurt himself, and then complain of the implement. *Judgment* and *skill* are wanted in handling a tool.

One teacher will produce capital results by using the Simultaneous method. Another tries to use it, but fails; his class becomes noisy and disorderly, and evil rather than good follows. Want of skill in the teacher produces this ill result, though he may blame the method or the children. "Bad workmen complain of their tools."

"The teacher should be *a man of many devices.*" (*Bell.*)

He requires a good set of working tools. He may use some more frequently than others, but he should know the possibilities connected with them all, and be able to use each with good effect in its place.

Methods are to be *used;* they are to be *servants,* not masters.

Good methods are often *caricatured* by persons who try to carry them out in detail, without grasping the underlying principles, or perceiving the reasons for the plan. Slavish copying is of little use. So long as a method hampers the teacher, he has not mastered it.

Only so far as Mind enters into our work is it likely to be valuable. Everything that insight, clear-headedness, definite purpose, careful observation, active thought, and acquired skill can bring to bear, must be pressed into service. Unintelligent teaching, and mechanical employment of devices, usually do as much harm in one direction as good in another.

Every true teacher will, in the long run, construct ***his own method.***

He may use all the hints, and advice, and help which he can obtain from reading and observation, but he will plan, and practise, and work independently. Methods and devices recommended in books, indicate the lines on which successful teachers have worked: they tell how a teacher *may*, but not how he *must* proceed. All such hints are *suggestive, not obligatory.*

"It is by your own eyes, and your own ears, and your own minds, and (I may add) by your own hearts, that you must observe, and learn, and profit. I can only point to methods, and say little else than, 'See here, and see there.'" (*Latham.*)

"**The way to do a thing is—just to do it.**" (*Stow.*) Make up your mind to teach in *some* way, by *some* means. *So far as we teach, we succeed,* whatever method we adopt.

Telling and Eliciting.

Telling and Eliciting are the simplest *processes* in Instruction and Educative Training respectively.

All practical teaching takes one of these forms.

The following examples are typical of what is constantly occurring in school, and they will serve to illustrate the contrasted processes or methods in class-teaching.

(*a*) **Pronouncing a word.** Suppose a little child attempts to read, "Do you see the spider in the picture?"

He will perhaps read off four words at sight, but may be stopped by the fifth. One teacher would *tell* him; whereupon the child would read —"spider in the—" and wait to be told again.

Another would direct the child to *look* at the word [spider], then perhaps ask him to *pronounce the first three letters* together, then the *next three*, and then the *whole word*, and so *help the child to help himself.*

The teacher may be obliged to tell after all, but he should generally utilize these little difficulties to *cause the learner to try*, and put him in the way of *using what power he has.* The interest of the class, as a whole, is also best promoted by applying this method collectively.

(*b*) **Spelling a word.** Suppose the teacher asks a boy to spell "spider."

If the child fail, the *teacher* may spell it, and then cause the child to spell it after him, or to write it so as to fix it in his mind.

Or the difficulty may be dealt with on the opposite plan. The teacher might ask the *child* to pronounce the word slowly, then to pronounce it in parts, then to spell the first part, then the second, then the whole word, then to write it on his slate, &c.

(*c*) **A fault in writing**, *e.g.*, a wrongly-shaped letter. We assume that the teacher uses individual faults in teaching the whole class.

Two things have to be aimed at in this case. (1) The children must *see what is wrong*, or wherein the fault lies, and (2) *how to put it right*. The teacher may gain his end by *showing or telling them himself*, or by so using his black-board and contriving his questions, as to *enable them to point out* the fault, to *discover* what is wrong and *why* it is wrong, *what it should be*, and so on.

(*d*) **A rule in Arithmetic**, *e.g.* (1) To calculate mentally the price of 1 lb. avoirdupois, the price of 1 oz. being given.

The rule may be *told*, stated clearly, and fixed by repetition and examples.

It may be educed somewhat in this way. "How many farthings make a shilling?"—"Then if you call farthings shillings, you multiply by—?" (Examples, such as multiply 1½d. by 48, 3¼d. by 48 can come in here.) "What is one-third of 48?"—"If then we multiply by 48, and then divide the product by 3, how many times the multiplicand should we have?"—"What would 16 times ¾d. be?"—"and 16 times 3d., and 4½d.?" &c.—"How many ozs. in 1 lb. butter?"—"What would 1 lb. butter cost at 1½d. per oz.?"—"and at 3d.?"—"at 4¾d.?"—"at 2d.?"—"at 5d.?" &c. "*How then can we find the price of* 1 *lb. when the price of an oz. is given?*" The teacher will now see that the rule is put into proper form, and committed to memory exactly, before he gives fresh exercises upon it.

(2) **For "Cross-multiplication." (Duodecimals.)**

As before, the rule may be *told* clause by clause, and be lodged in the mind with all its accompaniments by careful repetition. The learners could also "work sums" followed by the rule, and thus fix it yet more firmly.

The teacher may, however, *elicit* the rule. Let him bring papers, one a foot square, ruled into primes and square inches; let one of the primes and one of the inches be strongly marked. Additional pieces, 1 foot by 1 inch, and 1 inch square would also be useful.

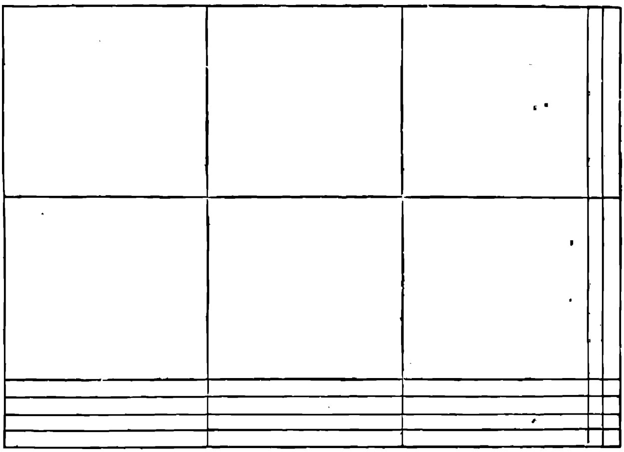
Deal with these so that boys may *form a clear idea* of the relation

between the square foot, the prime, and the square inch. A few mental exercises might profitably come in here.

Now let him draw a rectangle on the black-board, 2 feet by 3 feet, and show, *i.e.*, *get the boys to see*, that its area is 6 square feet.

Next, draw another rectangle, 3 feet 1 inch long, by 2 feet wide, and show its area to be 6 feet 2 primes, or 6 feet 24 square inches.

Then ask for the superficial content of an oblong table-top, 3 feet 2 inches long, by 2 feet 4 inches wide, and analyse the figure as in the diagram, so that the area is *seen* to be 6 square feet, 16 primes (or 1 foot 4 primes), and 8 square inches, or in all 7 feet, 4 primes, 8 square inches, or again 7 feet 56 square inches.



Lastly, show the numerical working on the black-board, dealing with each product in turn, analysing it, and putting its parts into proper columns.

ft.	in.
3	2 (linear)
2	4 (linear)

sq. ft.	primes.	sq. in.
6	4	
1	0	8
7	4	8

From this we could *educe or elicit* facts about the separate results, as well as the general rule. The columns would soon be dispensed with, if they were used at all. Smaller divisions, such as the twelfth part of a square inch, and its duodecimal parts, could be dealt with on the same principle; if actual specimens be used, they might be shown in black drawings on white paper, or be cut out in white paper, and gummed on a slate or black surface.

(*e*) **A definition or rule in Grammar**, *e.g.*, a first lesson on the Adjective.

A wrong method is *to state the rule*, and have it *learnt by heart;* next to *explain it by examples*, and then *give exercises* upon it.

Another plan, *beginning with examples*, and by which the children are *led to see the uses* of the adjective, and are put in the way of *making a definition for themselves*, should always be adopted.

(*f*) **An incidental difficulty.** (1) Stow illustrates the difference between what he terms "*teaching*" and "*training*" by several examples, of which the following is a sample.

A class was reading the history of the Israelites in Egypt, and of the people using straw in making bricks. The children did not know why straw was used, nor whether the bricks were burned or dried in the sun. "Were I to tell them," says he, "that would be teaching,—but I shall *cause them to tell me*,—and that will be *training*." The trainer brought out from the children in successive stages—the difficulty of breaking a bunch of straw,—the strengthening effect of parallel layers of straw in soft clay, and in dried bricks,—that bricks are burned in England,—that they were not burned in Egypt, or the straw would become ashes,—that the soil in Egypt was probably more sandy than English brick-earth, because straw was needed to bind it, and that bricks could be dried in the hot Egyptian sun.

(2) *A simpler illustration* of a similar kind, suited for an infant class:—

In giving a lesson on the *elephant*, the question arose whether it lived in hot or in cold countries. The children were not sure. The teacher might have *told* them, or he might have spoken of the size of the animal, of its food being grass and vegetables, of its eating much at a meal,—and then appeal to the children's observation, and ask whether grass and trees grow best in cold or in warm weather,—then in what countries vegetation is richest,—then in what countries the elephant is *likely* to be found,—&c.

Examples might be multiplied from all departments of school-work, though all subjects do not equally admit of both forms of treatment.

Instruction, imparting knowledge, implanting facts in the mind, *is the main intellectual business of the elementary school.* To lose sight of this, or to undervalue it, or to confine ourselves to "educative" methods alone, is to mistake our duty.

Telling must be a chief device in Instruction.

Children *must take some things on trust*, or on the authority of their teacher.

On the other hand, *it is a serious omission to neglect "training" or "forging" the mind.*

All school lessons allow training, and some should be introduced which have it for their main purpose. He must be a weak teacher, who cannot see some of the possibilities connected even with "counting," and who cannot make this exercise yield some share of training.

Common-sense adaptation to circumstances is always wanted. Acknowledged rules have sometimes to be apparently put in abeyance.

For example, children must learn to calculate a little, and to add and subtract in a small way, before they can see the *rationale* for addition and subtraction. Here then we put *processes before reasons*, and seemingly violate a fundamental principle. Yet we do but *conform to a larger principle* in proceeding thus; for we *proceed according to the power of the learners.* They *can count*, but they *cannot reason about number* until later on. Much good and no harm is done meantime, if they work to some extent empirically, under the teacher's direction.

"*Teaching is causing anyone to know*" (*Hart*), and is brought about by awakening the learner's mind to proper action (Training), and providing it with suitable material to act upon (Instruction, chiefly Telling). Training and Telling go together to make Education.

Telling is not teaching; you may *tell* a boy twenty times, and yet he will not know, if his mind does not act.

Get him to strive, and *telling becomes teaching, whilst it secures training* also.

Summary. The most noteworthy points in the contrasted methods are shown in the following table:—

	TELLING.	ELICITING.
1. The *process*.	Consists in arranging systematically, stating clearly, and repeating variously, until the matter is fixed firmly, and in order.	Consists in drawing out, or leading out the learner's powers, by making him use them on suitable material.

	TELLING.	ELICITING.
2. *Mental attitude* of learner, including *Memory.*	Receptive (though pupil co-operates with teacher). Pupil takes on authority of his teacher; modest attitude of mind required. Memory too often (but not necessarily) cultivated at expense of other intellectual powers. "Easy come, easy go."	"Creative." (Clifford.) Pupil "finds out" for himself; this fosters independent work, self-help, and self-culture. Promotes development of mind as a whole, by exercising many faculties vigorously. What is won with toil is valued; impressions are likely to last. If well-managed, gives more pleasure than telling.
3. *Time.*	Is the quickest way to teach, but as children often forget what they are told, the saving of time is frequently more apparent than real.	Always takes more time than simple telling; yet usually saves time in the end.
4. *Order, or Mode of Procedure.*	*May* begin at child's standpoint; link new to old; proceed according to the learner's power, from known to unknown, simple to complex, concrete to abstract, &c.	*Must* begin at home, with what the child already knows, and *must* proceed from known to unknown, &c.
5. *Difficulty.*	Is easier. Demands clear-headedness, definite purpose, proper choice and arrangement of matter, clear statement, full elucidation, and varied repetition.	Is more difficult for both teacher and pupil. Not only have all the requirements in opposite column to be satisfied, but there must be advanced power of holding the pupil's attention, and making him try, as well as much more inventiveness, scheming, planning, adaptiveness, and tact.
6. *When to use.*	May always be used. Must be adopted with names, dates, and wherever there is absolute ignorance.	Possible in most, but not in all cases. The general rules, *Educe whenever you can, Tell as little as possible*, have to be applied with judgment. We cannot educe what is not already in the mind in some form. It is bad to worry children for what they cannot give.
7. *Dangers.*	It seems to pay best and to produce an immediate result; hence the temptation to employ it overmuch. In storing the memory, one is apt to lose sight of general development—to neglect "forging" whilst "furnishing" the mind. Liable to degenerate into "cramming," to overstrain memory, and thrust on the pupil more than he can methodically arrange and recall. Teacher likely to do for the boy what he might and should do for himself.	Tendency to employ it too little, because of the greater demand it makes, because it takes more time, and because the results are not at once apparent. In trying to develop mental power as a whole, facts, material of knowledge, may not receive fair attention; too little "furnishing." May be employed in wrong places, or overmuch, or otherwise unwisely:—*e.g.*, when the teacher miscalculates the pupil's power, and tries to educe what cannot fairly be elicited, or introduces a series of questions needlessly, when the matter is simple, and one would be enough.

ILLUSTRATION, EXPLANATION.

Clearing up, Comprehension. *Clear up as you go.* Never leave a thing until you have made it plain.

Such elucidation as will *enable the learner to form correct and clear ideas*, is the very soul of teaching.

Our sympathetic knowledge should tell us when explanation is wanted, when a difficulty is felt, and wherein it consists. Sympathy and insight will help us to devise and bring some means to bear for clearing the road, and will let us know when we have done enough.

To explain anything is to *make it more clear*, simple, and easy to be understood.

Difficulties can be explained only upon one principle. **Use what the learner already knows, or what he can already do,** and show wherein the difficult or unfamiliar thing *resembles and differs* from it. Ideas about unknown things, whether objects or rules in arithmetic, or definitions in grammar, must be formed out of other ideas, derived or derivable from things which are known; **proceed from the known to the unknown.**

Only such illustrations, analogies, contrasts, and words may be used as are well within the child's powers. What is *easy*, *plain*, *simple*, *common*, *close at hand*, should be employed in explaining what is difficult, obscure, complex, strange, and remote.

That teacher who habitually uses abundant illustration, *throws light* on dark places, *enriches* his teaching, promotes *pleased interest*, and is likely to make a *deeper impression*.

Whenever the pupil meets a difficulty which ought to be explained, **let the teacher think of something like it,** *which the boy already knows, and use this in clearing up the matter.* An aptitude for discovering or constructing good illustrative examples, coupled with skill in bringing them to bear is almost indispensable in the teacher, and fortunately becomes much stronger with practice.

The Teacher's language is an important element.

He must be able to express himself with reasonable fluency. *Simple, clear, precise* language is essential.

Form clear ideas; have *something to say.* Tell this *simply, naturally, deliberately,* but never allow your language to be puerile, mean, or vulgar.

Use the vocal organs with decision; open the mouth; let lips, teeth, and tongue touch and leave one another sharply. Let articulation be correct, and enunciation forcible. Do not mumble, or stifle your words, or talk too loudly or in a hurry.

Speak *grammatically*.

Choose such words as will express neither more nor less than your exact meaning. Only such words may be used as the learners understand. In explaining a word, we may not use the word itself, nor words more difficult than it. Anglo-Saxon nouns and adjectives should have the preference. Avoid introducing abstract terms except with elder children. If you are in doubt which word to use, choose the more simple.

Short sentences favour clearness. If a sentence must be long, make its separate clauses simple, and easy of comprehension one by one.

Talk as to your little brother, using the best language he can fully understand. Fix your mind's eye on the *dullest or most backward* member of the class (always in reason), and speak so that he shall understand you. "*Fine talk*" is a mistake.

The teacher's language is sure to be *imitated*.

Explanation and Illustration may be *verbal*, or *objective*.

I. **Verbal exposition** must ever be the teacher's main resource, though he is by no means to restrict himself to it in class teaching.

In using this device, we must conform to the general rule or principle. Verbal appeal to common things, familiar sights, and every-day experiences has to be relied on. Refer to the natural features, productions, and circumstances of the neighbourhood. Contrast common colloquial mistakes with correct forms in lessons on language. Bring in short, well-told anecdotes and stories drawn from child-life at home, in the playground, and in school.

Stow advocated "**picturing out**" or representing the thing in a set of word-pictures, that the child might "*see*" it, or might construct a mind-picture for himself, under the trainer's guidance. This is the truest exposition; *ideas* are formed in connection with the words.

This desirable result is brought about by using simple *language*, abundant *illustration*, and familiar *analogy*; the children's *experience* is constantly brought in and employed; "*like*," "*as*," and "*so*" are freely and judiciously used.

Verbal exposition consists in (1) *substituting a fresh word* or words for a strange or difficult word; (2) *expressing an idea in the child's own language;* (3) supplying such *extra information* as is needed for the proper comprehension of an idea, (4) such "*picturing out*" as Stow recommended and practised.

Verbal exposition, pure and simple, often fails to secure comprehension. A meaning may be *given in words*, but *the child does not see it.* The true test for exposition is—*Has the teacher enabled the learner to form a clear idea?*

Dictionary meanings are not without their value, but they have almost always to be supplemented by other forms of statement, and by reference to examples.

Such a word as "*amphibious*" would be explained verbally as "*able to live on land or in water.*" (We leave out of view the *scientific* meaning of amphibian.) But this meagre explanation, beyond which some teachers would not go, might be further elucidated, by reference to the etymology of the word, and certainly by referring to illustrative examples—the frog, alligator, seal, walrus, &c., and to what the learner has observed or read about them. Or the teacher might begin by asking for the names of animals which could live both on land and in water, and thus get the illustrative examples he wants. Then he would picture these animals in their native haunts, describe their movements, and show why the word "amphibious" is suitable, by referring to its etymology. He thus forms several links of association, each of which helps to give completeness to the idea.

Clauses and sentences have frequently to be dealt with on the same principle, separate words explained, and the whole clause turned about, paraphrased, and often illustrated, and the embodied idea presented in various simple ways.

Extra information *is often needed.*

Cowper's poem on the "*Loss of the Royal George*" cannot be properly understood, unless the teacher narrates the story of the sad event, or "pictures out" the occurrence.

Bryon's "*Waterloo*" requires a similar introductory narrative, a graphic story of the aims and rapid movements of Napoleon, and the means adopted by the allies to frustrate them. A map or plan of the country round Brussels would be useful in explaining the manœuvres of the contending armies. Then would come the story of the Duchess of Richmond's ball, and of the officers being called away from the festival by the advance

of Napoleon. The teacher might also inform his pupils that the Emperor's movements were known to Wellington, and that the idea of surprise conveyed by the poem is not in strict accordance with fact. Outside information of this kind is distinct from the necessary explanations of "revelry," "Belgium's capital," and the gathering of "beauty" and "chivalry."

Whether it will be wise to go so far afield, must be left to the teacher's judgment. The temptation to introduce over-much explanatory information is very great, and as the earnest and well-read teacher is most liable to be thus led astray, he is warned *not to lose sight of the point* to be explained, *or of the object of the lesson*, in the attractiveness and interest which he and the pupils feel for the explanation. *Leaving off at the right place* is an art in itself. Do not *waste* time in explaining.

II. **Objective Illustration**, in which the eye and the other organs of sense are directly appealed to, and called in to help the verbal exposition, is the best means of leaving clear impressions. Nothing aids the formation of lucid ideas about things like actually seeing and handling the objects themselves. "**One eye is worth two ears.**" "*Seeing is believing.*"

Let a teacher try to convey an idea of a square, or of the working parts of a steam-engine, first without, and then with the aid of a model, a drawing, or the black-board. Or let him note the different effect produced, first by a lesson on Long Measure, or on Avoirdupois Weight, *in which he introduces and uses such actual measures and weights as he can get;* and secondly, by lessons on the same rules in which names and numbers only are employed. Or once more, let him observe the difference between *telling* a boy that a letter in writing is too wide, and *showing* him, or *letting him see* where the fault lies, by making the correct form in pencil over the faulty letter.

Actual specimens, *objects themselves*, are the best illustrations, when they are available.

Not only do they *excite curiosity* at the outset, but they enable a capable teacher to *maintain* and *direct* it, and *give point to any extra information* he can connect with the object. *The very presence* of illustrative specimens *helps* both children and teacher; the objects have a value irrespective of the teaching.

But *they need to be well used,* if attention is to be stimulated, maintained, and directed systematically to those matters which make for the teacher's purpose. Making the most of them, utilizing them fully to gain the

proposed end, is an evidence of capability in which young teachers often fall short, either from want of preparation, or tact.

Even where things as a whole cannot be used, *parts or models* can often be brought in to aid pictorial representations and verbal descriptions. An elephant's tooth, or a tiger's claw, could help in a lesson, though the animals could not be shown except in a picture.

A little *ingenuity will sometimes provide* the teacher with *specimens.* The leaf of the tea-plant, for example, can be exhibited, if search be made amongst the spent leaves of the tea-pot, and some of the more perfect be unrolled carefully, pressed between blotting-paper, and then gummed on card-board.

Models and Apparatus of a homely character, made from materials which children can obtain, are better than showy and expensive appliances.

Hydrogen can be prepared in a four-ounce medicine bottle, and collected by upward displacement, with due precautions, in small phials and glasses. If the bottle be fitted with a cork, through which a piece of tobacco pipe is passed, the gas could be ignited at the jet, and the "hydrogen harmonicon" produced. All the leading properties of the gas could be demonstrated thus, with small quantities and inexpensive apparatus.

An *electrical machine* can be made out of an ordinary wine bottle, and the needful accessories easily constructed. The writer has known boys to make such machines, and to come up with pride and say, "I got a spark out of my machine last night, sir!" This may be a very small result in one aspect, but it shows how the imitativeness of boys can be dealt with, to say nothing of the deeper effects. So, after one or two lessons on *Magnetism*, boys have been seen testing the lamp-posts and iron railings in the neighbourhood, with "compasses" of their own construction, to see if they were magnetized or not.

A *sectional model* of the essential parts of a steam-engine, showing the cylinder, piston, piston rod, crank, and fly or driving-wheel, can be made out of stout card-board or mill-board; a pump is easily constructed from two pieces of glass-tubing, one larger in calibre than the other, with a couple of corks, some pins, and some oiled paper.

Pupils should be encouraged to make pieces of apparatus.

Pictures and Diagrams, though less perfect illustrations than real objects, are yet more useful in general practice. They are often the only visible illustrations available.

At best we must be content with pictures of the elephant, the emu, the North American Indian, the tea-plant, the locomotive steam-engine, and, indeed, the great majority of objects mentioned in a lesson. But the picture is a material help if the teacher be an *adept in pointing out what makes for his purpose*, if he will compare the representation with familiar things, and *expound* well.

Diagrams often prepare the way for using models and specimens with better effect.

Objects may be too small, or their parts may not be easily visible. Diagrams then become almost indispensable. For example, the *radicle and plumule* in a germinating pea, or grain of wheat, might be clearly shown by using a picture on a greatly enlarged scale. If then the teacher were to distribute *specimens* (prepared by planting them loosely in moist warm earth for a day or two), the children could distinguish the parts which had been shown on the diagram.

In a first lesson on the *structure of the heart, a bold diagram*, showing the chambers and valves, with the fibrous strings holding them, ought to come first; a preliminary notion would thus be formed in the pupils' minds. A *model* (such as Rammé's) would then do splendid service, although there would be a difficulty in exhibiting its details to a large class. Lastly, *a bullock's or sheep's heart might be dissected*, and the chambers, valves, and other details shown in order. The teacher thus repeats his lesson three times, and always in an interesting way. It will be noted that we are speaking only of such lessons as would be given in ordinary school-work.

Some lessons cannot be properly dealt with unless diagrams be freely used.

The *butterfly* would be a good subject for a gallery lesson. The head, thorax, and abdomen *might* be shown from an actual specimen, although it would be better to use a picture first. But interesting details, the tongue, the compound eye, the feet, the spiracles, the striated scales, &c., *must* be shown by diagrams, if the lesson be to a large class, and if it is to occupy only the usual half-hour or forty minutes. These things can be properly seen only with a microscope, and so much time would be taken up if every member of the class is to have only a peep, that a complete lesson would be impossible. The microscope might be brought some Friday afternoon, or after an examination, or on any other suitable occasion.

A sketch made up of a few lines, rapidly *drawn* on the

black-board, is often better than many sentences of description and explanation.

A drawing of an ellipse serves much better than a verbal definition, the points of agreement and difference between it and the circle come out well when shown side by side. The same thing holds so constantly, that every teacher should practise black-board drawing, and accustom himself to use it freely.

The Black-board is the most valuable piece of apparatus in the school.

There is hardly a lesson in which it may not be profitably used. Good class teaching is almost impossible without it.

It appeals to the *eye*, to visual perception, and visual memory. Compare the effect produced by *telling* a boy that one mountain is ten times as high as another, with that produced by *showing* him what the statement means.

Whenever a *statement* has to be emphasized, or a *rule*, or *result*, or *special point* brought into prominence, the black-board can be pressed into service, and will commonly be the best implement the teacher can use.

Difficult *words*, simple *diagrams*, and sketch *maps* should go on it during the *reading* lesson. In *writing*, its employment should be well-nigh incessant, to teach *what to aim at*, to *point out mistakes, and show how to correct* them. In *arithmetic*, not only should *explanatory examples* introductory to a new rule be exhibited, but *almost every sum* set to a large class needs to be worked out by the teacher, after his pupils have made their attempt on slate or paper. A teacher may go too far in this; he may do more than is fairly required to let the child know *what* to do, and *how* to do it; he then wastes time. But the mistake usually lies in the other direction, and whilst it is desirable to keep to the mean, *it is safer to err on the side of over-explanation*, than to leave a thing obscure.

In *grammar*, *geography*, and *oral lessons* generally, as the parts are dealt with, the heads should be put on the board, and details be added in order. A sketch, more or less skeleton-like, but yet sufficient to indicate the line of procedure, and the character of the information, should usually appear towards the close of a collective lesson.

The *writing* on the black-board should be *free*, *uniform*, of *fair size*, and, above all things, *easy to read*. It should be done quickly, but nothing like scribble ought to appear before a class.

Place the board a little to the *right* of the children, not too near, nor too low, nor too high. Let the light so fall that all may see what is written.

SIMILARITY AND CONTRAST.

Analogy, Similarity, *Resemblance,*—**Contrast,** *Comparison, must* be used, when we wish to give clear ideas about unknown, or little known things.

The essence of Illustration lies in Similarity, and Contrast, pointing out resemblances, and differences, *shewing wherein the unfamiliar thing is* **like** *and* **unlike** *something well known.*

This is a re-statement of the general principle mentioned before. Examples remain to be given.

We have *likened methods to tools* in a former chapter, to show their real nature, and to enforce certain considerations of importance. Some detailed analogies connected with their use, were also adduced, with the design of elucidating the matter further.

An *analogy** might be instituted *between teaching and constructing a freehand drawing.* The draughtsman has a *copy*; the teacher has a *plan*; both *start with a purpose.*—The draughtsman tries first to get his proportions true, and to obtain a broad outline; he is not careful about distinctness and definiteness. Then he fills in the larger details, then the smaller, and lastly goes carefully and minutely over the whole to finish it, or "line it in." So the teacher proceeds *from the whole to the parts*, uses what the children already know as the foundation of minuter knowledge, *i.e.*, he goes from *indefinite to definite*, adds detail to detail as the child's knowledge and power grow (a *further or minuter application of definiteness*), and clears up, or *proceeds from the parts to the whole* by careful repetition. Commonly there is some *rubbing out* to be done; this is always a pity. It often leaves a permanent blur or disfigurement in the drawing, just as wrong ideas tend to persist in the learner's mind, and to be grievously obstructive.

Analogies of this kind help to illustrate, but they may easily become fantastic. If used, they should be carefully thought out and applied.

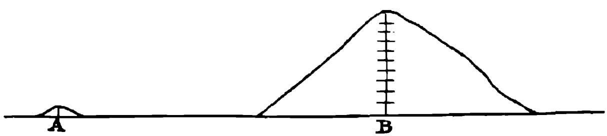
Compare the unknown with the known; use the known to explain the unknown.

* *Analogy* is not the similarity between two *things*, but the resemblance between their *relations* or ratios; thus, when we speak of the "*head*" of a family, we mean that he occupies a relation towards the family similar to that occupied by the head towards the body, thinking for it, and governing it.

If we wish to give an idea of the *tiger*, we may liken it to a huge cat, but so many times taller, and longer, and bigger than the domestic pet. We may contrast the colour and markings of both animals, and compare their homes and habits,—such as sleeping by day, hunting by night, crouching, hiding, stealthy movement, springing suddenly on their prey, &c.—Pictures would be useful in such a lesson.—A *lion* might also be compared with a cat, with a mane like, and yet unlike a horse, and so on. The child who has seen a *sparrow*, may be led to form a pretty correct idea about an *eagle*, or an *ostrich*, if the teacher will dwell on, and compare size, general form, character of wings, beak, foot, eye, food, movements, and habits, and will employ pictures and the black-board. So in a lesson on *Lapland*, the surroundings, pursuits, stature, and dress of the Laplander should be compared with those of the Englishman. And once more, the habit, leaf, and flower of the *tea-plant* should be connected with the same points in the wild-rose, the damson, or better, the single camellia.

Ideas about relative heights, distances, &c., are often made clearer by comparison.

A teacher who tells his class that Snowdon is 3571 feet high, does well to add that it is so many times as high as some local hill. He will do better if he goes on further to say—"So, if we represent our little hill by this upright line A, we must represent Snowdon by this line B, ten times as high." "And if this figure represent the shape and size of our hill in section, the size of Snowdon will be represented by the second figure."



Teachers should know the heights, lengths, and distances of buildings, hills, rivers, and noteworthy places near the school, that they may use them in illustration. *Saying* that a river is four times as long as another, may well be supplemented by representing the lengths by lines on the black-board, and thus *showing* what the statement means.

We may often **show what a thing is, by showing what it is not.**

Contrasting what is faulty with what is correct is always a good means of enabling a learner to see *where* and *why* he is wrong; consequently, it

is the best preliminary to setting him right. *Make much of mistakes;* correct them well.

In a *reading* lesson, contrast faulty articulation, enunciation, modulation, rate, &c., with your more correct pattern, and do so freely. In *writing*, a fault can be pointed out by exhibiting it side by side with the proper form. And *generally*, by accentuating the difference between wrong and right, the pupil learns better *what to avoid*, and *what to imitate.*

The **device of juxtaposition** is strongly recommended.

Where children are likely to be hindered by broad similarity, or where differences are slight, place the objects side by side, and dwell on the differences: d, b, p, q; c, e; C, G; *2*, *Q*; *E*, *3*; will exemplify this.

The effectiveness of the device is well seen in contrasting form with form, and colour with colour, in lessons to little children.

REPETITION.

Its necessity. We must repeat frequently, if we would implant firmly.

"Repetition is the teacher's sheet anchor." "Grounding demands grinding." "Repetition is the father and mother of Memory."

Try to *avoid tedium* whilst you *insist on thoroughness.*

Aim at *repetition without sameness. Vary the forms of repetition.* A skilful teacher has the faculty of making the same point a dozen times, and each time so varying it, that while the idea is again grasped, the identity is not recognized.

See that children understand what they repeat; this will remove some of the tedium otherwise attached to saying tables, working the same kind of sums, and going over the same lessons again and again.

1. **Direct repetition** is sometimes advisable.

We may enforce a statement by restating it in the same form. We may fix new words, new rules, and summaries, by causing the children to repeat them several times.

Useful as this form of repetition may be, *it is sadly overdone and misused.* A parrot-like *repetition of words* is far too common. Earnest teachers often make lessons wearisome, and drive attention away, by *laboriously going over well-trodden ground,* in their laudable desire to be

thorough. Repeating the "rivers of Asia," or the "capes of Australia," for half an hour at a stretch will impress the memory, but at the cost of irksomeness which might be avoided.

2. **Indirect repetition**, saying the same thing, or expressing the same idea in *other words*, or in *other ways*, is almost always to be preferred.

No two minds are exactly alike; *each different form of statement will appeal more directly to some one* class of mind. *A new side or phase in the idea* is made prominent, or is elucidated by every varied re-statement whilst the *general impression becomes more precise* and sure by each repetition.

Questioning, such as will *cause the pupils to reproduce our teaching in their own words*, in suitable parts, in proper order, and in varied forms, *is the best of all ways of repeating*.

We can thus make *sure* that our teaching has gone home.

Illustrations. (*a*) The writer once found a large class seated on a gallery, under the charge of an energetic teacher. Her method of teaching to read was as follows:—

Pointing to a word, the teacher said, "T—o—to"; the children repeated simultaneously, "T—o—to." This was done rapidly six times in succession; another word was then dealt with on the same plan, and the reading lesson was made up thus.

The word might have been dealt with as successfully, far more pleasantly, and quite as quickly in the long run, whilst variety could be introduced, and some exercise for thought provided, if the teacher had proceeded differently.—After pointing to the word, and spelling and pronouncing it, she might say, "What word is this?"—"Spell it"—"T—o—spells?"—"Willie, come and show me the word."—"All. What word has he to show?"—"Again"—"Is he right?"—"Boys in third seat, what letters is it made of?"—"Mary, come and print it on the board"—"Which letter is she to make first?"—"And which next?" "All tell me what the word is called"—"Write 'to' on your slate," &c. —Thus the same thing is presented and reproduced variously; eyes, ears, perceptive faculty, and thinking power are exercised.

(*b*) In geography lessons, it is common to find teachers who rely almost entirely upon bald repetition.

For example, one points to the map and says, "Indian Ocean, south of Asia." The pupils repeat, "Indian Ocean, south of Asia," three, four, or perhaps six times. The teacher then goes to the other oceans, and deals with them in the same way, and spends half an hour in a geography lesson of this kind.

Such a fact might be driven home, variety introduced, and thought encouraged by a more rational mode of repetition. The teacher, pointing to map, would ask the name of this continent (Asia), and of this peninsula (India), and would tell the children if they did not know. He shows that India projects into this [pointing] body of water, which therefore gets the name "Indian Ocean." (Assuming that children know N. S. E. and W. of map) the teacher asks, "In what direction does Asia lie from the Indian Ocean?"—"And the Indian Ocean from Asia?"—"Show where the Indian Ocean touches Asia"—"Run the pointer along the coast of the Indian Ocean"—"On which side of that line does Asia lie?"—"And the Indian Ocean?"—"Which is the further north?"—"Which way must a man in the middle of Asia journey, if he wishes to reach the Indian Ocean?"—"Why is this water called the Indian Ocean?"—This may be amplified, curtailed, or altered at the teacher's discretion.

Recapitulation is going over in *outline* and *summing up* the leading topics in a lesson. It is a valuable form of repetition.

Assuming that the matter of a lesson has been arranged in suitable parts, each part should be recapitulated before it is left, and the whole lesson gone over at the end. Reasonable variety should be introduced into this exercise also, and it is well to let it come after an interval if possible, and not immediately after the information has been given.

One of the great names in Education is that of **Jacotot** (1770—1840). The cardinal features in his method were:—

(1) *Learn something thoroughly, then refer everything else to it.* One thing surely known and fixed, serves as a centre around which fresh facts can be grouped, or on which new acquirements can be built. The principle is a form of the maxim, *Use the learner's present knowledge* as the starting point for anything new.

(2) *Repeat incessantly*, to prevent knowledge from slipping away, and to fix what has been learned.

With both, the learner was made to *think*, to *use* what he had learned, and to *construct* with it. In the thoroughness with which all this was done, and in his modes of working, lay Jacotot's peculiar excellence as a teacher in France and Belgium. Many have tried to act on his plans; some have succeeded, others have failed.

INDUCTIVE AND DEDUCTIVE TEACHING.

Forms of Reasoning. There are two mutually reverse or complementary modes of reasoning: (1) *Induction*, "reasoning from particulars to generals;" (2) *Deduction*, "reasoning from generals to particulars."

In *Induction*, separate facts are *observed*, *collated*, *and classified*. A *general law* which governs the facts, is then arrived at tentatively, by a "skilful guess." The truth of the generalization is then tested by applying it to new cases. Much modification is often needed before a "law" of universal application can be formulated.

In *Deduction*, a rule or generalized statement is taken as true, and special or detailed conclusions are drawn from it, or it is applied to fresh cases.

Corresponding Forms of Teaching. There are two mutually reverse or complementary methods for *directing the thoughts* of our pupils. These correspond to the modes of reasoning just mentioned.

In the following arrangement, identical or allied forms are grouped together. The correlatives, *Inductive and Deductive*, *Analytic and Synthetic*, *Method of Discovery and Method of Instruction*, *à priori and à posteriori*, should be noticed.*

(1) **Inductive Method**, *Analytical Method*, *Method of Discovery*, *à posteriori method*, proceeds from effects to causes, and from facts, and examples, to reasons, principles, and rules, from complex ideas or logical wholes to simpler ideas or logical parts.

For instance, we might *discover* and formulate a general method or rule for working "*Rule of Three*," by *analyzing* several simple examples, noticing wherein our methods of working the various sums agree, and then expressing the points of agreement in words. (To do this well, work about four easy sums in direct simple proportion; reason each step out in

* "If there are any *truths* which the mind possesses, whether consciously or unconsciously, before and independent of experience, they may be called *à priori* truths, as belonging to it *prior* to all that it acquires from the world around. On the other hand, truths which are acquired by observation and experience are called *à posteriori* truths, because they come to the mind after it has become acquainted with external facts."

(*Thomson*, "*Outlines of Laws of Thought.*")

detail, and with reference to the rule you intend to give; leave the working side by side on the black-board; do not introduce difficulties too early.)

This is a form of *Induction*; we begin with examples, and end with a general rule. This method is *analytic*; it takes each example to pieces, deals with the parts one by one, sets aside the special numbers employed in each case, and enables us to see wherein the different examples agree in principle. It is a method of *discovery*; for if successfully employed, we are enabled to find out the rule. It is also a method *à posteriori*; because we infer the truth of the general rule, from observing that the results or consequences which follow from using it, are reliable.

Observe, that in this method we pass from the comparatively easy and better known, to the relatively obscure and difficult.

Proceeding from the concrete to the abstract, and from the logical whole to the logical parts (*i.e.*, to higher and higher, and therefore simpler abstractions) makes a continually increasing demand on mind power as we ascend. This explains the difficulty we meet in using the higher forms of the method in school.

(2) **Deductive Method**, *Synthetic Method*, *Method of Instruction*, *à priori method*, proceeds from the logical parts to the logical whole, from causes to effects, from generalizations, principles, and rules, to special applications, consequences, and examples. Commencing with simple, inclusive notions, it adds particular to particular, until a complex idea is formed.

If, for instance, we assume the truth of the ordinary rule for working a "*Rule of Three*" sum, and then state and work the question by it, we proceed *deductively*, for we begin with the general truth, and bring it to bear on particular cases.

Or, if in giving a lesson on "*Tense*," we first state broadly what tense is; then introduce the additional ideas, *present*, *past*, and *future*, and afterwards the future subdivisions, *indefinite*, *incomplete*, *perfect*, and the like, this is to proceed synthetically. We start with a simple idea, and bring in additional notions one by one, until we arrive at complicated particular cases, such as *future-perfect tense*, *present incomplete tense*, *interrogative form*, &c.

Logical Synthesis usually presents a difficulty to the beginner. He does not at once see that general terms and rules express ideas which are more simple than those expressed by less general terms and examples; he has not yet learned what logicians mean by "***extension***" and "***intension***." Yet *an example not only includes the rule*

(*i.e.*, that which it has in common with all similar examples), ***but also its own specialities***, which render it different from all other examples. So the idea conveyed by the general term "***animal***" is more simple than that conveyed by "***amphibian***" or "***fish.***" Amphibians and fishes are animals; they possess the attributes which collectively constitute animality, ***but they are something more also.*** Each has ***additional*** marks which separate it from other animals. Boys will usually answer wrongly, if they are asked which word expresses the more complex idea, "*man*," or "*Julius Cæsar.*" The "***extension***" of the term "*man*" includes all humanity, but its "*intension*" (the sum of the qualities common to all men) is comparatively small.

- (1) *Natural objects*
  - (2) *Animal* (sensation)
    - (3) *Vertebrate* (back-bone)
      - Mammal
      - (4) *Sauropsidian* (lower jaw articulated to skull by quadrate bone; other characters also)
        - Birds
        - (5) *Reptile* (scutes or scales for covering, never feathers; other characters also)
          - (6) *Chelonian* (bony-case to body, *e.g.*, Tortoise)
          - Ophidian (*e.g.*, Snakes)
          - Lacertilian (Lizards)
          - *Crocodiles* (horny exoskeleton, and bony dermal exoskeleton, 4-chambered heart)
            - Procœlia
            - Amphicœlia
            - Opisthocœlia
          - &c.
          - &c.
      - Icthyopsidian
        - Amphibian
        - Fish
    - Invertebrate
  - Vegetable
  - Mineral

We *generalize* by setting aside points of difference, and attending only to points of agreement; the higher the generalization, the fewer will be the points of agreement (*intension*), or the fewer will be the ideas included in the general term, or again, the more simple will the general term be. The *extension* of a term may be said to vary inversely with its *intension.*

The preceding table may help. In *generalizing*, we should begin, say, with line (6), and setting aside all points in which tortoises, snakes, lizards, &c., differ from one another, and noting only those in

which they agree, we get the simpler idea expressed by the word "reptile." By a similar process, applied to each group, *i.e.*, dropping out something at every stage, we work back from (6) to (1), the word expressing the simplest idea, but including the greatest number of individuals of all.

In *Synthesis* the process is reversed. Beginning with (1), we add new ideas at each step until we reach (6).

The Synthetic method is pre-eminently the Method of Instruction, the plan which experience and common sense induce us to rely mainly upon, when imparting knowledge.

In all lessons of information, the method is trustworthy. Beginning with the simplest facts and ideas, new facts are introduced, and fresh ideas added one by one, in proper order and place, and a complex whole is built up piece by piece. If we make sure that each part of the completed whole has been duly grasped, and securely lodged in its own place, we know our lesson has been a success.

Synthesis pre-supposes Analysis. Synthesis can be reliable only so far as the previous analysis is accurate and complete.

If, for example, we would teach writing synthetically, we must examine the script characters to discover the elements which enter into their construction. This has been well done by Mulhaüser. When the elementary forms have been discovered and separated, they can be taught one by one, and afterwards combined into letters and words.

Such analysis is part of the teacher's preliminary duty in every lesson.

The prime essential in using the Synthetic method is that the parts shall be simple and well understood, and that the teacher recombine them in due order, or put each in its place, and make its relation to the whole clear and plain.

In employing the Analytic method, each detail or part of the analysis should be made sufficiently simple, the details taken together should cover all the ground, and the process should be systematic. This being satisfactory, it is well to recombine the parts or recapitulate synthetically.

Do not confound Induction with Educing or Eliciting.

Induction is a particular form of reasoning, and to teach inductively is to put our pupils through a corresponding course of thinking. To *educe, or elicit, is to draw out* of the children what we desire, *by any means.*

We ought not to imagine that the grand rules "Proceed from known to unknown," "Begin at home," "Link new to old," "Use what the child already knows," *are applicable to Inductive Teaching alone.*

We act on these rules, when, *starting with examples*, we cause children to examine and analyse, and then, setting points of difference aside, we *lead our pupils to an inclusive statement or general rule.* For educative purposes and large training, this Inductive Method is our best implement.

But having mastered the rule, we may make it a starting point. *Applying a well-known and well-understood rule to a fresh case* is also a way of proceeding from known to unknown.

Both Induction and Deduction are forms of reasoning; *both* demand thought.

Each leads the thoughts in its own channel; each furnishes its own form of training; but both are educative.

By combining them, or by using each in its place, our pupils get a fine mental discipline.

Caution. There is a best time for everything in Education, and it is a mistake and a misuse of time and existing force to anticipate nature, and require children to learn or to do what they will be able to learn more easily, and to do much better later on. School-time is seed-time; it is nature's time for storing the Memory and laying up facts. Reasoning power is in its elementary stages only; do not try to force it unduly; do not ask overmuch. We ought to ask children "*Why?*" in many things, but not in all. Still less may we expect them to go through a long chain of thought, except in mathematical demonstrations amongst the elder scholars.

Individual and Simultaneous Teaching. Collective Teaching.

Meaning. In the primary sense, these terms refer to the mode in which pupils are grouped; they are also used to denote certain methods of dealing with children.

(1) **Individual Teaching** deals with the scholars singly, or one by one. (*a*) It may deal with the pupil *without reference to the other members of the class.* (2) It may so deal with an individual as to *help each member of the class*, and thus forward its progress as a whole; it then passes on to *Collective* teaching.

Individual teaching, pure and simple, was often adopted in old-fashioned schools. The teacher would call up his pupils one by one to read to him, whilst the other children were differently employed. In Arithmetic, each child would probably have a different sum, commonly taken from a book, and the teacher passed from child to child, aiding each in turn. This principle operated throughout. In modern schools, this strictly individual method is infrequent, though it is sometimes used.

The second form is exemplified in an ordinary class-lesson. When we correct a mistake in reading or writing, we not only set the pupil right who made it, but we also call the attention of every member of the class to the fault, and to the mode of avoiding it or of putting it right. Teaching the individual thus benefits all his classmates.

Note in this second case, that the teaching is *individual* so far as one, or as each scholar is concerned; it is *simultaneous* in teaching all at the same time; it is *collective* in dealing with many as one, or in teaching many in a group. The terms are often loosely employed; they do not indicate a logical division.

Simultaneous Teaching, in strictness, means teaching more than one *at the same time*. The term is often used as a synonym for *collective teaching*. With more propriety, it is applied to that form of teaching in which the children answer or repeat the same thing together, so far as they are able.

Pestalozzi's plan will serve for an example. Holding up a piece of chalk, he would say, "This is chalk," whereupon all the children would repeat the sentence after him. He would then say, "Chalk is a mineral," "Chalk is made up of little broken shells," "Chalk is friable," &c. Each sentence would be repeated in turn like the first.

Simultaneous reading is a more familiar instance.

Whenever the teacher causes all the children to repeat after him, or to answer together, he employs the Simultaneous method.

1. This method *often serves good purposes.*

(1) It is one means of introducing that *variety* which is so desirable in all school-work. Simultaneous *reading*, for example, is useful as a change, as well as a means of giving plenty of practice. Simultaneous and individual *answering* may be profitably intermixed in all lessons.

(2) Attention sometimes flags when the questioning is directed to individuals; it may be regained by a few short, easy questions answered simultaneously. This accomplished, the teacher may repass to individual questioning at his discretion.

(3) All things which appeal mainly to the verbal memory, such as *dates and tables*, *may be learned by simultaneous repetition*, after they have been properly introduced or taught. This exercise is often perverted, and made far too mechanical, even in Geography and Grammar.

(4) Whenever it is desirable to *carry the children's assent*, or to *impress* a point, a simultaneous response comes in well. *Ellipses*, with little children, can generally be filled in simultaneously; so also in general *recapitulation*, when we *gather up what is known*.

(5) Simultaneous repetition of what the teacher has just inculcated, *e.g.*, a rule, an important statement, or even a special answer, is a good means of *calling attention* to it, and *fixing* it in the memory.

Certain *difficulties and dangers* are connected with simultaneous work.

(1) As children differ in attainment and in quality of mind, and therefore in their mental grasp, and way of looking at things, there are sure to be different answers to questions requiring thought. *Confusion* would ensue if these answers were given simultaneously. *Do not employ simultaneous answering*, therefore, *unless the proper response is evident*, and well within the children's power.

(2) In simultaneous lessons, it is often found that *only a part of the children really work*. The rest strive but little ; they simply take their cue from the workers, and chime in with a strange expertness, and a most deceptive appearance of unanimity, and common knowledge. No little shrewdness and strength are needed to cope properly with this semblance of work without the reality. *See that all work, or that the teaching is really simultaneous*. The method is essentially deceptive.

Collective Teaching is properly used to mean teaching several or many *in a group*. The group may be a single class, or a collection of classes. Some restrict the meaning to dealing with a group of classes.

In its ordinary acceptation, it means *Class-teaching*.

Taking this last as the best meaning, Collective teaching includes the judicious use of all means, devices, and methods for getting groups of children to learn. Telling and eliciting, teaching and training, giving information and testing, analysis and synthesis, simultaneous and individual teaching, interrogation, inductive and deductive teaching, and repetition, all come in.

Confusion often arises, because terms which should have a distinct meaning are sometimes used indifferently for one another.

(*a*) **Oral teaching** (1) is literally, *teaching by word of mouth*, and so far applies to all teaching in which the teacher speaks. (2) Sometimes it means *teaching without a text-book*, as in many lessons on history and grammar. (3) At other times, it refers to *lessons compiled and arranged by the teacher, and given without a book*, as in ordinary object lessons.

(*b*) **Gallery lesson** has an obvious literal reference to the *place* where the lesson is given. Usually its meaning is narrowed down to lessons under (2) and (3) last paragraph, given to a class on a gallery.

(*c*) **Object lesson** refers to the *matter* treated of. Literally it would be a lesson on an object, such as chalk, tea, &c. But commonly all lessons under (*a*) (3) are included.

(*d*) **Simultaneous lesson** has reference to teaching several *at the same time*, and by the same means, in any subject, and in any place.

(*e*) **Collective lesson** is a lesson given to a collection or group of children or of classes. It has reference to the *arrangement* of the scholars. The lesson may take any form, and be given in any place.

A school-class, if well-organized, is made up of individuals who can be profitably taught, and dealt with together.

There is approximately the same substratum of general acquirement, and a similarity of intellectual power, as well as a common need amongst the members of the class. In teaching one, we may therefore teach all; in correcting one, we may correct all; we *teach many as one.*

Individuality ought to be considered. The children in a class have *much in common*, in virtue of which we are justified in dealing with them collectively.

Yet *no two are exactly alike ;* it must therefore be a mistake to treat all on exactly the same plan. Individual power, aptitude, attainment, outside of and distinct from the general class work, ought to be recognized and dealt with.

Study your scholars, that you may know how best to reach and deal with every one. Every class-teacher must *differentiate* his pupils, *or his work can hardly be called intelligent, and will certainly fall short.* Give *as much attention as you* possibly *can to individuals, without damaging the class* as a whole. The progress of the class as a whole, depends on the progress of its individual members.

Perfect class-teaching is made up of (1) just such instruction and training as **all** *the children require* in common, and (2) exactly such *extra* instruction and training as **each** *child requires* in particular.

Only after the teacher knows something of each child, what he is, what he wants, what he can do, will he be able to provide "food for every variety of mind," and to see that "none are crammed or surfeited, and none are starved." (*Stow.*)

The *commonest mistake or defect* in collective teaching is ***not pressing the general teaching close home to individuals***, or not reaching every member of the class.

A few of *the more willing children often monopolize* the teacher's questions and attention, or *get much more than their share*, although, as a rule, these require it least.

The irksomeness of keeping unwilling scholars up to the mark, the trouble involved in working with them, and the tiresome going over a thing again and again, and simplifying and adapting it to dull children, sometimes tempts the teacher to turn away to the brighter pupils, and *leave the dullards alone.*

Or the teacher, in his anxiety to get on, is apt to *do the work for his pupils*, or really to *excuse them from doing it;* thus they neither do nor obtain any good.

Plausible excuses might be urged in all these cases, but the teacher cannot relieve himself of blame; he should have observed more closely, urged more vigorously, and shown more determined purpose.

Affirmative and Interrogative Methods.

These correlatives correspond in the main with *telling* and *educing*, though they are not identical with them.

In one, the teacher gives information, or tells the scholar; in the other, the scholar is made to bring forth any information he has, and tell his teacher. Good class-teaching requires a judicious employment of both.

The affirmative method is rightly employed when the teacher has something *fresh* to impart, or when he introduces *what the children do not know.*

As this occurs to some extent in every lesson, and as some lessons are almost made up of matter new to the learners, the affirmative method *must be extensively used* in teaching.

Even when it is *possible* to educe, *it may be advisable to tell.*

The affirmative method alone is not enough. Unless *questioning be mixed with telling*, teaching is never trustworthy. Complete method not only *offers* knowledge to the learners, but *forces them to receive* it; the teacher not only *supplies* information, but *causes his scholars to reproduce* it. Cross-examination is some security for thoroughness.

A great deal runs to waste where the teacher "lectures," instead of keeping his class actively responsive. Teachers sometimes wonder and complain that children do not know, although they have been told, &c. To keep this right, supplement telling by frequent questioning.

Value of Interrogation. Questioning has a twofold use in school-work. (1) It is the *chief means of eliciting, and educative training;* (2) it is the *complement of telling*, and the teacher's *instrument for testing* the fulness and accuracy of the pupil's knowledge.

The possibilities connected with Interrogation, and the frequency or continuousness of its use, are indicated in the maxim, "*Question the lesson in, then question it out again.*"

Questions serve different purposes at the different stages of a lesson.

(1) **Experimental** *questioning, preliminary gauging* to discover what the pupils know already. This should be animated, searching, and brief. If successful, it will lead the *pupil* to see his own deficiencies, arouse his interest, and create a desire for further information. It will also let the *teacher* know where to begin, and what direction to take.

(2) **Educational** *questioning leads the pupil's thoughts* to the conclusion we have predetermined. This is the highest and most difficult phase of questioning, and demands analytic power, and concentrated thought, as well as clear perception of the mutual relation between the various steps in the reasoning process. By such questioning, the boys become "sharers in giving the lessons," and "skilful finders rather than passive recipients of truth."

(3) **Recapitulatory** *questioning*, the *questioning of examination*, is used

chiefly as a *test* of thoroughness. By it, we find out *where we have succeeded*, and *what wants further clearing up*. As it also causes the pupils to go over the work again, to reproduce, to repeat, and to show that they have made the lesson their own, recapitulatory questioning is a means of *clearing* and *fixing* what has been taught.

N.B. (*a*) *New facts or new truths* should usually be driven home by thoughtful questioning.

(*b*) If the matter of a lesson be well divided, *each part should be recapitulated*. In a good lesson, every part is separately dealt with, and pressed well home by varied questioning. *Rapid questioning on the whole lesson* is almost always the best form of final recapitulation.

Questioning is an Art, and facility comes only after *painstaking practice*.

"We can only become good questioners after much patient practice, and, as is the case with every art, proficiency can only be obtained by working at it, and education in it only by the teaching of experience." (*Fitch*.)

No one can be a good teacher until he can question with readiness and effect. They who would become good questioners must pay the price.

Some marks of good Questions and good Questioning.

1. The questions can be **easily understood**.

(*a*) They are *simple* and *short*, expressed in a few well-chosen and well-arranged words. No needless circumlocutions are brought in, such as, "Can anyone tell me?" "Which of you knows?" &c. (*Fitch*, "*Lectures on Teaching*.")

(*b*) They are *the teacher's own* words.

(*c*) They are *definite, pointed, direct, admitting properly of but one answer*, and that the answer the teacher wishes to obtain. Indefiniteness is one of the commonest and most serious faults in questioning. Vague and indefinite questions bewilder a thoughtful boy, and do more to promote the mischievous habit of guessing than anything else, except allowing it to go unchecked. It is not always easy to frame questions which shall be free from this objection, although few but the practised questioner would appreciate the difficulty. Note, however, that questions may seem indefinite in form, if taken alone, which yet are made definite enough by their context, when they come as part of a series. But indefinite questions are so serious an evil that it behoves teachers to use all diligence and watchfulness to prevent themselves from lapsing into them. Such questions as the following are types of the worst form of indefiniteness,—"*What is*

there in the North of Africa?" (Answer expected, "The Sahara Desert"): or, "*What took place before the battle of Hastings?*" (Answer expected, "Harold's brother invaded England.") Either of these questions admits of an unlimited number of answers, many of which would be quite as appropriate as the answers which were anticipated.

(*d*) They are *adapted to the pupil's capacity;* they are such as the pupils may reasonably be expected to answer.

II. They **require thought** before they can bé answered.

(*a*) They do *not admit of being answered by guess.* The *morale* of a class must suffer if guessing be allowed; the teacher ought therefore to be on his guard against fostering this bad habit by his style of questioning.

(*b*) They *seldom admit of being answered by "Yes" or "No."* Such questions may come, however, where the response is plain, and it is desirable to carry the children's assent.

(*c*) Questions which can be *answered in single words* are allowable; they enable the teacher to sound the child's knowledge, and to promote briskness and activity. But it is well to frame questions so as to *get sentences for answers;* this makes children think, and trains them to express their thoughts in words. Persistence and force will be wanted in the teacher, and the lesson is likely to drag unless questions admitting of single-word answers be introduced.

(*d*) They do *not tell much*, nor do they suggest the answer by their *mere form.* "Leading questions" should be avoided. To give long questions which convey information, and then accept simple assent for an answer, is a double mistake.

(*e*) They *seldom follow immediately on the information;* the answer is not a simple echo of what the teacher has just said. Such questions may perhaps serve for repetition, but they ought not to be taken as a final or sufficient dealing with a matter. Ask "*Why?*" and "*Wherefore?*" Demand the *reasons* for easy answers.

III. They are **varied in form**, and are **framed artistically.**

Questions ought not to be all cast in the same mould. *Avoid monotony of expression.* Let questions *keep the interrogative form* throughout; put the interrogative words "What?" "When?" "Where?" &c., at the beginning, not at the end of the question. The following forms are objectionable:—"*We have been talking about—what?*" "*The lion is found—where?*" "*The Indus is a river—of what country?*" Say rather, "*What have we been talking about?*" "*Where is the lion found?*" "*Through which country does the Indus flow?*" This fault, or inelegance of expression, is common.

IV. They follow in **due sequence**, and with **proper rapidity.**

The answer to one question should usually suggest the next, and the whole series of questions and answers should be such as the teacher expected, and *laid his plans for.* Not that he is to prepare his questions beforehand, like a catechism; let him rather know his subject, form a purpose, *keep his mind active*, and then frame his questions as insight directs during the progress of the lesson.

The *pauses* between questions should be long enough to allow the pupils to comprehend both question and answer, but no time should be wasted. *Be brisk; do not be in a hurry.*

V. They are **well distributed.**

The teacher must *not attend too exclusively to volunteers*, though they should get their share. *Look sharply after those who are disinclined to work*, and keep them up to the mark. Every child should feel that he may be called on to answer, and that if he be inattentive, he is pretty sure to be questioned.

It is a good plan, after putting a question, to run the eye rapidly over the class, and, after allowing an instant for thought, call on one or another, or perhaps all to answer.

Ellipsis is a form of questioning, in which the teacher begins a sentence, and leaves a word or clause to be supplied by the children. It is *filling up "a point the children already know,"* and suggests the answer more readily than an ordinary direct question.

Ellipsis is a useful device in its place. Some teachers employ it very freely, and by it hold the children in hand, direct their thoughts, help them to express their ideas, and keep up an active sympathy on both sides. It is *easier* to fill in an ellipsis than to make up the answer to a question; hence ellipsis is well suited to little children. But it *minimizes mental exercise*, by doing away with the need for deeper thinking. Whilst it has advantages, it may be easily employed overmuch, and in wrong places.

Stow insists strongly on the necessity for *mixing questions with ellipses*, if we would *train* as well as teach.

"The children's ideas are *led out* by questioning, but they are *led on* by ellipses and questions combined." "A question does not suggest or supply knowledge to a child. Ellipses properly introduced suggest as well as draw out knowledge." "The ellipses partially suggest the requisite facts, and the questions stir up what the children already know." "Questions set the mind astir, ellipses direct what has been set a-moving." (*Stow.*)

Good ellipses resemble good direct questions.

They should always be *based on what children know*, and should be *definite*, that there may be no confusion in thinking or answering. Whilst they are easier than questions, yet they should *require some thought* in filling them up.

Bad or *objectionable forms* are frequent.

Ellipsis cannot be good if any of the fundamental rules for questioning be violated.

A practice, usually reprehensible, of supplying the first syllable or part of the required word is not uncommon; *e.g.*, "*The Amazon is a river of South A—*" [—"*merica*" being the response]; or again, "*The capital of Turkey is Con—*" [—"*stantinople*"].

Do not let the ellipsis always be the last word in a sentence.

Ellipsis *may* be used in the school, but it should *not be employed in the upper classes.*

It is *misleading*, and does not usually represent much mental activity.

It is of most use with the *young*, *ignorant*, and *timid.*

Natural temperament in some teachers enables them to use it more freely, and to better purpose than others.

Ellipses which are to be filled in simultaneously, are very effective in *re-awakening attention*, and for *stirring up a sluggish class.*

Answers.—*Good questions secure good answers.*

A good answer is the *thoughtful* result of the pupil's own work.

Skill in receiving and dealing with answers is essential to good class questioning.

(1) *No answer.* In this case the teacher is usually in fault: he has miscalculated the power of the class, or has been unskilful in holding or leading the attention up to the point he wants. The teacher may, however, rightly propound a question which the children cannot answer, as a means of arousing interest. Lessons can often be effectively introduced in this way.

(2) *Wrong answers must be put right.* They indicate where the teacher has not made matters clear, or where he has mistaken the pupil's knowledge or power, and *always shew him where he may teach with the certainty that teaching is wanted.* Incorrect answers arising from ignorance, should be received with kindness. If possible, lead the pupil to see why he is wrong. Ignorance, if not culpable, ought not to be treated as a crime. Do not resort to ridicule when an answer of this kind is given. We

cannot expect a child to strive to answer, if he feels that he may be laughed at for his pains.

(3) *Partial answers.* When the answer is only *partially correct*, or when it is *ill-expressed*, the teacher should, as a rule, endeavour patiently to *lead the pupils to the right.* He may often unravel the difficulty, and make the matter clear, by proposing other questions, and then in due course returning to the original question, and obtaining the correct answer. Get the child to see that his answer is defective, and where or why it is faulty, then put him upon the right track, and lead him on.—Weak teachers often pass over such answers, or acknowledge them with a helpless "Yes," or "No."

Always give a child credit for any element of correctness which his answer may contain.

(4) *Correct answers* to good questions satisfy both teacher and pupil. Make the most of them; they may be turned about, and new questions may be based upon them. Satisfy yourself that every scholar could answer your question correctly and intelligently, before you leave it.

(5) *Bad answers* show there is something seriously out of order. If the answer be a random *guess*, or be *wilfully wrong*, or *rude*, the child is impertinent, but the teacher is usually to blame; his discipline is bad.

Pupils should be encouraged to ask for the solution of any difficulty which may arise during a lesson.

The Socratic Method is thus named from the celebrated Greek philosopher, Socrates, who was put to death by the Athenians on a charge of impiety, B.C. 399. Socrates was accustomed to expose a fallacy, or inculcate a truth, by propounding a series of skilfully framed questions. These would follow in such a manner, that in the end, *the respondent would be led to the conclusion at which Socrates desired him to arrive*, and this *without any direct instruction from the philosopher.*

"The whole sum of what may be said about questioning is comprised in this. It ought to set the learners thinking, to promote activity and energy on their parts, to arouse the whole mental faculty into action, instead of blindly cultivating the memory at the expense of the higher intellectual powers. That is the best questioning which best stimulates action on the part of the learner, which gives him a habit of thinking and enquiring for himself, which tends in great measure to render him independent of his

teacher. All our questioning should aim at this, and the success of our teaching must be measured not only by the amount of information we have imparted, but by the degree in which we have strengthened the judgment and enlarged the capacity of our pupils, and imparted to them that searching and enquiring spirit which is a far surer basis for all future acquisition than any amount of mere information whatever." (*Fitch.*)

DEFINITION.

Meaning. A logical definition is "an expression which explains any term, *so as to separate it from everything else*, as a boundary separates fields." (*Whately.*)

Definition should be "*per genus et differentiam.*" Choose a suitable generic term first, then add a term expressing some quality belonging to the thing defined, and to nothing else.

Examples.	*Genus.*	*Differentia.*
A man is -	an animal -	(1) who reasons. (2) who uses fire. (3) who makes his own clothes, &c.
A pronoun is -	a word -	used instead of a noun.
An amphibian is -	a vertebrate animal	breathing by gills when immature, but by lungs when adult.

A good definition is (1) *adequate*, (2) *plainer than the thing defined*, (3) *expressed in a suitable number of proper words;* neither prolix, nor unduly brief, nor indistinct, nor negative when it might be affirmative.

To define a fish as *an animal which lives in the water*, or as *an animal with an air-bladder* would be wrong. Other animals besides fishes live in water, and all fishes have not an air-bladder. To define a net as *anything reticulated* would be a double offence against the second rule.

Nothing is gained by defining very simple words. Any advantage accruing from the practice, can come only in the upper classes, where abstract thinking has to be cultivated.

The *meanings* of words *are* usually *best shown by their context*, or by their *use*.

Illustrations serve for definitions with little children.

Synonyms are not definitions, though they sometimes serve for explanations, *e.g.*, "A noun is a name."

Description.

Meaning. To describe a thing is to tell its nature and properties, or to paint it in words.—A good description is such an orderly, selective enumeration of attributes to the thing described, as will enable the reader or hearer to form a correct and sufficient idea about the thing.

"A *description* is complete, when it has enumerated the most obvious or remarkable peculiarities of an object; a *definition* is complete, when it has fixed upon the single peculiarity which distinguishes the object from others nearly resembling it.—What is added to definition is description." (*Taylor.*)

He who would describe well must therefore (1) have a clear idea, or *distinct mental picture* in his mind. (2) *Each necessary part must be dealt with in turn*, and made clear before it is left. The whole mental picture has to be gone over, and an attempt made to use just so many descriptive terms as will exactly convey the idea.—The order should be *from the whole to the parts*, as a rule.

Division.

A logical division is "the distinct enumeration of the several classes or individuals which are signified by a common name."

The rules for division are: (1) *The same principle of division must be adhered to throughout.* (2) *The parts*, or constituent species, *should together be equal to the whole.* (3) *The parts*, or constituent species, *should be distinct; they should exclude one another.*

In other words, the divisions should be founded on and governed by *only one principle* or basis. *Nothing* may be *left out*, and *nothing* new *brought in*. Everything signified by or included under the common name should appear *in one, and in only one*, of the subordinate classes.

Cross-division is a common fault.

To enumerate the books in a library as folios, and quartos (*size*), and Latin and French, and English (*language*), mathematical works, histories, and works of general information (*contents*), would be to make this mistake.

It is often impossible to make a division in which the constituent species do not overlap.

A teacher's purpose *may* be best served by some division not logically perfect.

SPECIAL ORAL LESSONS.

Their Value. These lessons have an important direct and indirect influence on general school-work.

(1) *They supplement other lessons*, and supply knowledge the children would not otherwise obtain; thus they *fill up gaps* in the curriculum. They may bear more or less closely on ordinary subjects, on matters arising out of the Reading, or Geography, or some other lesson. Or they may have special reference to "common things," to circumstances in the neighbourhood, or to matters of general utility. Especially may they serve to familiarize children with leading natural laws, and their modes of action.

(2) *They smooth the way for other work*, by adding to that fund of general knowledge which is available in all departments.

(3) *Habits of observation and reflection* are initiated, and *knowledge of ordinary things* is imparted; from these, much quiet and refined enjoyment may come in after life. Every meadow and hedgerow, every cliff and railway cutting, every object natural or artificial, offers points of interest to him who has been taught what to look for, and how to observe. Good Object-lessons may almost be said to supply boys with extra senses, so greatly do they increase the perceptive powers.

(4) *Faculty as a whole can be more readily reached and trained.* Pupils can be led to *see*, to *think*, and to *say* what they think, and to *reason* about it; increased mental power results, and this tells for good all round.

(5) These lessons *introduce variety* into the school-work.

(6) *Teachers and scholars are brought into closer and more direct contact*, under conditions which are unusually favourable to good feeling. Collective teaching of this character is always enjoyable on both sides.

(7) No form of school-work will do so much towards *developing power in the teacher*, since no other form demands such varied exercise of skill.

Preparation for these lessons. Collective lessons of this higher type always require careful preparation.

It has been just noted, that no other form of school-work makes such demands on the teacher. He is thrown on his own resources; success depends directly on himself. He has to *interest*, *instruct*, and *educate* a large number for some time. Weakness or fault in him becomes more

apparent, whilst power and skill have the fullest opportunity of manifesting themselves. These lessons afford the best single test of the teacher's fitness for his work.

To succeed, he must have a fair knowledge of the needs and capacities of his class, and must carefully adapt his lessons to them. He must know his subject thoroughly, and must be skilled in applying the necessary devices for arresting and maintaining attention. His thoughts must be continually active, and yet he must keep a tight rein over them to prevent undue discursiveness. He must also have a power of readily seizing on any circumstance which may arise during the lesson, and forcing it to be of service, and must be skilled in bringing tact, fertility of resource, and general clear-headedness to bear, so as to gain his end.

NOTES OF LESSONS.

I. **Teaching Notes** are *sketches in outline* for the teacher's use, serving for handy reference before or during the lesson.

They may consist of the *facts* of the lesson *arranged in order*. Any *illustration* or *fragment of method* which is likely to be of special use, may also be entered.

Such notes refresh the memory, and help to make teaching systematic. If preserved, they will be serviceable at a future time. It is well to enter them on alternate pages in a book, that additions and alterations may be made on the blank page.

Some dislike to use their notes openly, because they feel that their hold on the class, and sympathetic co-working between them and the children are injured thereby. Others think that interest and good-will are evoked, when children see their teacher has obviously taken pains on their behalf. Experience will shew which is the better plan for us. Preparation will be necessary in either case, most of all when we decline to bring our notes into open use.

N.B.—Young teachers are strongly recommended to make and use sketch notes in abundance; they serve better purposes even than "Full Notes" at first, and practice makes one expert in selecting and arranging material. Drawing up "Full Notes" is then a far less formidable task than some imagine it to be, especially when the teacher has learned how to teach what he has selected in ways of his own, and when he can succeed in making his scholars carry it away.

II. **Notes for the black-board.** A good black-board sketch

is an abstract or synopsis, showing in outline the *matter*, *arrangement*, and *mode of procedure* in the lesson.

The *matter* should be represented by just so many abbreviated statements or key-words as will serve; these can be *arranged* under appropriate headings, and in *order*. Sentences are seldom wanted.

Parts should be kept separate. Varied spacing, distinguishing letters, and figures, different sizes and forms of writing, underlining, wide and narrow margins, &c., may be used to indicate the relative importance, the co ordination, and connection of words and parts. Ultimately, a skeleton, or framework, or simple outline *picture* of the lesson should appear.—Teachers are sometimes reproached for their minute divisions, and distinguishing letters and figures, but if these enable us to make things clear, and do better work, we are amply justified in using them.

A well-made abstract is a lesson in itself, appealing to the *eye*, as the spoken lesson does to the ear. It adds something *objective* to the lesson, helps to *associate* facts in groups, and to *suggest* them in recapitulation, or when we would afterwards recall them. An orderly abstract, made by pupils and teacher as the lesson proceeds, provides an excellent form of *repetition*, gives *time to think*, helps to *methodize thinking*, and *aids the pupil in making such synopses* for himself.

Usually it is best to write the abstract as the lesson proceeds; sometimes it comes better when we recapitulate. Whether the sketch shall be used in recapitulation, or whether the board shall be removed, is a matter of circumstance, which the teacher must decide.

Sometimes it is not so necessary to aim at an orderly abstract. In arithmetic and geography, for example, the sums actually worked, or the sketch map may be the best summary.

III. **Full notes** should show what the whole lesson is, so far as this can be shown on paper. The *matter*, its *arrangement*, and the *method* by which the teacher intends to deal with each important detail, should be clearly indicated.

A skilled examiner could find out very nearly, from simply perusing "Full Notes," what the teacher knew of his subject, what skill he had in selecting matter, his power of systematic arrangement, and his acquaintance with methods and devices for interesting, instructing, and educating children.

No detailed plan can be laid down which will suit all cases. A set invariable style, or a slavish copying, must lead to mechanical results. In preparing, as in giving a lesson, the teacher must bring intelligence and common sense to bear, and must adapt his plans to circumstances.

Hints on preparing "Full Notes." (1) Consider the age, capacity, and requirements of the class. This will help you to decide on **what** to teach, **how much** to attempt in the allotted time, and **how** to deal with it.

Have a purpose in choosing, arranging, and teaching; let your work have an object and a meaning, in its parts and as a whole; consider the children. Matter and method can then be settled in outline, before going into detail.

(2) **Choose suitable matter.** *Quality*, *quantity*, and *arrangement* come under this.

Let matter be *interesting*, and *new*, or *freshly put* if possible, but let it always be *useful*, and *suited* to the class. *Accuracy* and *definiteness* are indispensable.

Matter should be *sufficient, but not superabundant.* Aim at completeness, but do not attempt too much. Choose such material as will best serve your purpose, and only so much as you can deal with thoroughly in the time. Do not try to crowd into your lesson all that you can say on the subject.

Arrange the matter in paragraphs, each complete in itself, and of but moderate length. Let these follow one another naturally, and not be too numerous.

(3) Decide on the **Method** to be adopted with the lesson as a whole, and with the various points of detail, and indicate your plans in the "Method" column of the notes.

Method, like matter, will be influenced by the character of the subject, and the capabilities of the class.

The teacher has to decide whether with the particular class and with the given subject it will be well for him to employ the "inductive" method or not. If he determine to use it, he must try to arrange the details of his plan accordingly. He has also to think what variety in method will be desirable at different stages, and, indeed, how *every part and detail* can be best taught.

If he feel that he must give a "Lesson of Instruction," he should remember the conditions on which the success of such a lesson depends. The chief of these are, orderly *arrangement*, apt *illustration*, the *association* of new matter with similar stores already existent in the mind, and a certain amount of *repetition*. His method should provide for these.

It is seldom desirable to keep exclusively to one method throughout a

lesson. New facts have to be taught in an "Inductive Lesson," and induction is available at times in a "Lesson of Information." Good method applies the best device at each point, to each set of circumstances, and is as varied as the circumstances themselves.

In filling up the "Method" column, *deal with each separate thing* you wish to draw out or put in, and *set down your idea or plan of doing it* opposite the point to which it refers, or else indicate both by figures. All the details of the teacher's plan should be mentioned. A well-filled "Method" column is the best part of the notes.

Any *words to be spelled or explained*, etymologically or otherwise, should be indicated, and the method column should show exactly how explanation is to be managed.

A horizontal line drawn across the page may indicate where *partial recapitulation* takes place.

An orderly *sketch for the black-board* should be added if needed.

The Introduction. An "introduction" should stimulate curiosity, awaken interest in the coming lesson, clear the road for it, and *really introduce it* in an effective way. Unless it answers these purposes, it does more harm than good.

A formal introduction is not necessary. Begin the actual lesson as soon as possible.

It is common to hear a lesson "introduced" by two or three paltry formal questions, ending in—"Yes, well our lesson is to be on—." Say at once, and without preamble, what you intend to do, rather than begin in this flimsy style. If, however, you can enlist the child's interest by showing that the subject is curious, or that it is ill-understood, or that further knowledge is desirable and likely to be useful, by all means do so.

Questioning on cognate matters which children already know is usually, if not always, a good practical method of introducing a lesson. New matter can then readily be linked to the old, and the unknown be connected with the known.

Any special device or method in introducing the lesson should be mentioned in the "Method" column of the notes.

Get a clear idea of the scope of your lesson, before preparing the "introduction." In fact, this had better be the last part of the preparation, although it appears first on the notes.

Notes should commence with statements as to :—

(1) *Class*, usually further distinguished by age of children for whom lesson is intended.

(2) *Time* the lesson is to occupy.

(3) *Apparatus, pictures, diagrams,* or *maps;* excluding black-board, chalk, and duster, which are always taken for granted.

(4) The *amount* of previous knowledge of the subject the teacher assumes the class to have.

MARKS OF A GOOD COLLECTIVE LESSON.

I. The Teacher.

(*a*) His *language* is well-chosen and grammatical, suited to his class and to his subject. It is *free from provincialisms.* His *enunciation* is clear and distinct. He speaks with *due rapidity,* but without hurry. His *tone* is sufficiently loud to be heard by all the members of the class; it is firm and authoritative, yet kind and genial, never querulous or snappish.

(*b*) His *manner* inspires confidence, but represses levity and assumption. It is authoritative yet kindly, vigorous, cheerful, patient, earnest, powerful, magisterial.

(*c*) His *eye and ear* are active; he sees and hears all he ought to see and hear. His eyes are upon all; all eyes are upon him.

(*d*) He *keeps order* without difficulty. He has *good power of command.* There is no occasion to stop the lesson to obtain order; good order seems to be a matter of course.

(*e*) He *commands attention,* and the attention is universal and sustained. No boy escapes his notice. All are made to do their share of the work. He requires and obtains real mental activity from every member of the class throughout the lesson. He is not deceived by a simulated attention, that quietude of vacant musing which weak teachers are apt to allow in boys who will sit still.

(*f*) He shows *versatility, ready tact,* and *fertility of resource;* he makes circumstances serve his purpose.

(*g*) He is *thoughtful,* and the children see, and appreciate it; this adds power to his teaching.

(*h*) He *knows his subject* thoroughly. He has studied it carefully, and has a surplus stock of information on all points; he is never posed by an unexpected difficulty.

(*k*) He *stands well,—chest* forward, *head* easily erect, *body* upright, *knees* pressed back, or with *feet and legs* in the "stand at ease" position. There is *no needless walking about nor ungraceful movement* of arms or head. Yet he is not stiff or immovable; his action is *natural and appropriate,* not forced nor affected.

His *position* is well chosen; he stands where he can see all, and be seen by all.

(*l*) He is *in sympathy with his class.* He understands the children, and they understand him. There is a bond between them which makes their work mutually pleasant.

> *N.B.—The foregoing is an absolutely perfect model after which all should strive; the difficulty of obtaining perfection is a stimulus to the earnest worker.*

II. The Lesson.

(*a*) *Matter and method are suited* to one another, and to the class. The lesson is not unduly simple, nor too difficult. It furnishes an intellectual exercise, whilst it imparts knowledge.

(*b*) *Is well arranged,* in simple logical order. It is *symmetrical* also; there is due proportion between its parts.

(*c*) Proceeds *step by step.* One part follows naturally from its predecessor; the lesson develops logically, the parts work out well. New matter is connected with the old; the teacher begins at home, and passes from the known to the unknown. Connected thought and sustained attention are exacted; the pupils are made to think with their teacher. When a result is obtained, the whole process of reaching it is grasped by the class.

Some teachers arrange their lesson-notes in "*steps;*" they break up their matter into parts, make each part complete in itself, join it to its predecessor, and make it an introduction to the next stage. Principles of arithmetic, and inductive lessons generally, readily admit of this treatment.

(*d*) *Each part is adequately dealt with* before it is left. The teacher clears up as he goes; what is done, is well done. Any incompleteness is detected and remedied by recapitulating each part. Restatement, fresh questions, and further recapitulation are used to secure thoroughness. No section is left until it is understood, and firmly grasped. "Everything is perfect from the beginning."

(*e*) *Explanations* are simple and pointed.

> Be sure that the meaning of a word is really made clearer by its etymology, before attempting to explain it etymologically.

(*f*) *Spelling* is judicious, and in proper amount.

> Here again, note that it is not the purpose of the special oral lesson to teach spelling Words are then to be spelled, only as an aid to remembering them, and as an additional means of associating them with their use. Sometimes there may be no spelling at all.

(*g*) The lesson is *completed in the allotted time.* One advantage of

recapitulating the parts of a lesson is, that it secures completeness as far as the lesson goes, even if there be not time to deliver the whole.

(*h*) The *questions* are well formed, definite, sequential, well distributed, duly rapid, and directed most frequently to the careless pupils.

(*k*) *Pauses* are long enough to allow proper comprehension of the questions or of the facts which are taught, but are not of such undue length as to cause waste of time. Resting places are provided, when the lesson is suitably divided, and its parts recapitulated with judgment.

(*l*) *The general plan is adhered to*, and discursiveness is restrained. It is reasonably modified when occasion requires.

III. The Black-board and Illustrations.

(*a*) These are *prepared*, and are in readiness when the lesson begins. Objective and pictorial illustrations are obtained and placed handy for use.

(*b*) The *black-board is placed properly*, so that all the class may easily read anything written upon it.

(*c*) The *black-board is freely used.* The writing upon it is good and neat. A complete scheme of the lesson appears upon the board when the lesson is finished.

(*d*) *The illustrations are suitable.* They really illustrate the lesson. The illustrations prepared by the teacher himself are commonly the most effective. He must bear in mind that the illustrative drawings and maps which he prepares *are to be viewed from a distance.* The outlines must therefore be bold, and light and shade must be very strongly marked. Handsome sheets of illustrations on various subjects are now published. If these have a place on the walls of the schools, a good deal of information is picked up informally by observant children.

IV. The Class.

The effect of a good collective lesson on the class has been expressed or implied in much that has gone before. The pupils will be orderly, attentive, interested, thoughtful, in sympathy with the teacher whilst the lesson is being delivered, and when it is finished, there will be a subdued pleasure, mingled with a regret that the lesson is over.

V. Broad tests.

A good lesson (1) *makes permanent additions to the pupil's store of useful knowledge;* the children carry away and retain a satisfactory amount of fresh information of good quality. (2) It *gives increased intellectual power*, for it encourages observation and reasoning, requires thoughtfulness, secures general mental activity, and therefore develops and

strengthens the mind. (3) It *has a good moral influence*, inasmuch as it makes duty pleasant for the time.

PREPARATION.

A general preparedness is part of the equipment of the practised teacher.

He has learned his subjects, and knows what to teach; frequent practice has made him expert also; he can repeat his lessons without much forethought. Ordinary school lessons are therefore often undertaken with little or no special preparation.

This general preparedness is *not always trustworthy*.

(1) The teacher often finds he has *miscalculated* his power. *Illustrations* which would be helpful, do not arise unbidden, and the lesson suffers from defect. *Unexpected difficulties* spring up, and have to be slurred over, or poorly dealt with, because the teacher was not ready for them. *Mistakes*, and even gross errors are sometimes made, for want of forethought and preparation, especially in reading and grammar.

(2) *Knowledge is only part of a teacher's qualification*, and of itself, *makes an intellectual gap between him and his pupils*. Unless he step over this, and come down to their level, he cannot do much for them. Adaptation is indispensable, if time is not to be wasted, and labour thrown away. No one can adapt, unless he think about children and subject together, and it must be unwise to leave this until he is in class, where numerous distractions prevent original thought.

(3) Giving the same lessons frequently, tends to *make practice mechanical*, to *set teaching in a groove*, to *cramp inventiveness*, and to *stifle* that *creative attitude* which every teacher must maintain watchfully if he would grow. Dr. Arnold, being asked why he took the trouble to prepare lessons on subjects with which he was already familiar, replied that he would rather his boys should drink from a running stream than from a stagnant pool.

Special preparation may in *rare* cases be dispensed with, but it is *usually desirable*, and *often* absolutely *necessary*.

No teacher should ever go into his class, *without* (1) *a distinct aim*, (2) *adequate knowledge*, (3) *due preparation*,—in other words, without knowing *what* he means to teach, *how* he means to teach it, and *why* he adopts his methods.

See your way through your lessons before you begin to teach; leave nothing to chance, nothing unprovided for.

However well-informed and skilful we may be, *we are not likely to do so well without preparation as with it.* "Desultory and disconnected teaching" is almost valueless. To go into a class without a plan, and then decide on a subject, or improvise a method on the spur of the moment, and trust to accident for success when we might command it, is not likely to produce any satisfactory results.

HOME LESSONS.

Advantages. (1) They serve to *recapitulate* the day's lessons.

Therefore they help to fix in the child's mind what has been taught; they enable the teacher to determine the actual results of his teaching, and serve to guide him in his future teaching.

(2) They serve as a *preparation* for next day.

(3) They cultivate *independent thinking and working* in the scholar, and thus become a means of discipline.

(4) They provide *useful employment* for the evening.

(5) They help to secure the *co-operation of intelligent parents.*

Home-lessons enable parents to judge what is being done at school, and to form an idea how their children are progressing. If these opinions be favourable, their interest in the school is naturally increased. *Judicious help* from parents is also of great value; children who receive attention at home always advance most rapidly.

Disadvantages. (1) *Ill-prepared* lessons.

These are commonly detected with ease. Prevention lies in impressing the defaulter with the idea that such laxity entails unpleasantness outweighing any gratification connected with it.

(2) *Unfair* work; *e.g.*, pupils being helped without the teacher's knowledge.

It is difficult, if not impossible, to prevent this absolutely, though it can usually be detected, and is sure to reveal itself by its consequences before long. Something may be done by pointing out to boys, that home-lessons are set so that their teacher may find out what they really can do, and that he wishes to teach them where they are ignorant; therefore it is unwise on their part to try to seem more clever than they really are. At the same time, children should avail themselves of proper help.

(3) ***Parents*** may ***not co-operate***; this is disheartening, and always has a bad influence on scholars.

Some regard it as no business of theirs to look after their children's lessons; others think that their children should do all that is needed at school, and be free to play, or be at their parents' disposal during the evening; others, again, are supine from sheer carelessness or ignorance.

(4) Possible *overtasking*.

After the strain of a day's work, children may require rest and play; home-lessons therefore should not take up too much time, nor be too difficult.

(5) *Careless* or superficial *examination* by the teacher.

This is an indirect but powerful incentive to carelessness in the children; if not well corrected, home-lessons had better not be set.

That home-lessons may fulfil their purpose, (*a*) the children should be *able to do* what is asked for, and, (*b*) there should be *careful examination*, followed by *careful correction* of mistakes.

Courses of Home-Lessons. Work to a plan; have a system.

It is well to have a *broad scheme* (say for a quarter) for each class, and then to arrange *details week by week*, distributing the work, and allotting due time to every subject.

Teachers are advised to *make out the whole week's work beforehand. Copies should be kept*, partly for recapitulation with the same scholars, partly because they become tried questions for fresh sets of pupils.

Setting, Examining, and Correcting Home-Lessons. With management, a great part of the home-work may be so arranged as to admit of preliminary examination and correction during the corresponding lesson next day.

Some prefer to devote a set time, sometimes the first, sometimes the last half-hour in the morning, to examination and correction. In these cases the time should be shown on the official time-table of the school.

In any case, *this work must be thoroughly done.* There may be a rapid *preliminary* examination into the general character of the work, but there must be a careful *detailed examination* also. A pupil teacher can do this as

a rule; even reliable monitors may mark sums or examine spelling. But the head teacher should revise this work, and all examinations of lessons not strictly mechanical must be done by a competent teacher. Marks which should be registered as a basis for the awarding of prizes, may be given after this detailed examination.

Corrections should then be made; those children who have come short, or who have made mistakes, should be required to complete their work, and rectify their mistakes. Lessons on making figures, or letters, or on writing single words can profitably come in also.

Subjects for Home-Lessons. As a rule, there should be something to *learn*, and something to *write*; something to *prepare*, and something by way of *recapitulation*.

The subjects will of necessity vary with the ability of the children to provide themselves with readers and text-books for their private use. When this is not the case, the lessons will be limited to the working of such tests as the pupils may readily copy from the black-board in a few minutes, and carry home to be worked out. A few sums based on the lesson given during the day, a sentence to be analysed or parsed, words taken from the reader to be written, and spelling, or a map, will be found most suitable, and they admit of ready correction. Map drawing is a favourite occupation with children, and a carefully-drawn and coloured map may be accepted as the home lesson for a series of evenings.

In schools where children use text-books which are their own property, the home-lessons may almost invariably be set from them. They may use the Reading book by learning the difficult words which have occurred in previous lessons. Examples in Arithmetic, and the facts in History and Geography, lend themselves to private study at home. In all writing exercises greater freedom and more independent treatment are allowable than in the copy and exercise books of the school. Individual taste may well be permitted to show itself in the ornamentation by elaborate headings and ruling of the lessons worked; but, on the other hand, the actual style of the handwriting and general neatness of the work will often suffer if not closely watched. A little time may occasionally be devoted in school to lessons dealing with the arranging of work, ruling of lines, writing or printing of headings, &c. All these lead children to take pride in their books, and develop habits essential to success in life.

As a general principle, new ground should not be broken at home. The exercises should follow the teaching and not precede it.

Punishment for ill-prepared home-work. The appropriate

punishment is detention, and requiring delinquents to complete what they have neglected to do.

It should be known, however, that teachers have no right to enforce the preparation of lessons at home, however desirable such preparation may be. Teachers would therefore do well to have a friendly understanding with parents, when admitting children to their school.

READING.

Importance and Value. Reading is commonly allowed to be the most important of the "three R's."

(1) *It is the great means by which we become acquainted with what lies out of the sphere of our own direct observation.* The man who cannot read has his ideas limited of necessity to what he can obtain from oral instruction and personal experience and observation. He who can read has all literature open to him ; he can make himself acquainted with the thoughts of the best and wisest men, and has, in fact, the key to all human knowledge in his possession. Ability to read early is an immense aid to general progress. Children who can read with pleasure at six or seven years of age (and Vicesimus Knox thought the power should be acquired, at the furthest, by the latter age) have a grand start, and will have a much easier path to tread in the educational race than those not thus privileged.

(2) Of all subjects, Reading opens the widest field for *imparting general information* and *ministering to general intelligence.*

(3) As Reading *increases the pupils' familiarity with the powers and proper arrangement of words*, it *helps children to express their thoughts*, both orally and in writing.

(4) Good reading demands perfect *understanding* of the relations which exist between the clauses and parts of sentences, coupled with *expressing* these different shades of relation by corresponding shades of expression. It thus exercises *rapid perception*, *judgment*, *adaptation*, and *taste.*

N.B. The power to give a really good Reading lesson marks a good teacher.

Its difficulty. Reading is a difficult subject to teach, and that for two chief reasons,—(1) the character of the subject itself, (2) the nature of the learners.

(1) Arbitrary characters, single or combined, are used as symbols for articulate sounds. Learning to read consists in learning to *recognize at a glance the characters* (*i.e.*, printed words, syllables, and letters) *which stand for sounds*, and in *associating the idea* suggested by the *spoken* word with the *appearance* of the corresponding printed characters in a book.

Associating the *word-symbol* with *word-sound*, and both with *word-meaning* is a complex process, requiring time and practice to enable anyone to do it readily.

(2) *Learners* are little children, who as yet *are not intellectually strong;* the inherent difficulty would therefore be more formidable to them.

In our language the difficulty is intensified by anomalies and irregularities of pronunciation. Morell says, "A confusion of ideas sets in in the mind of the child respecting the powers of the letters, which is very slowly and very painfully cleared up by chance, habit, or experience, and his capacity to know words is gained by an immense series of tentative efforts." Fitch points out, on the other hand, that these anomalies exist for philologists rather than children. Our pupils are content to accept pronunciation simply on our authority; having seen and pronounced a word a few times they recognize and pronounce it in future; it becomes a permanent mental possession for them. Because of their perfect receptivity, and the strength of their acquisitive powers, children find it much easier to learn to read than many imagine. Although, however, *the difficulty may have been exaggerated*, teachers should not undervalue it.

In learning to read, the pupil passes through a **preliminary stage**; he has (1) to *overcome the mechanical difficulty* of the subject, before he can (2) *read intelligently and intelligibly.*

(1) **Mechanical Reading** is unavoidable until the pupil understands what he is reading. The difficulty lasts as long as the *words themselves cause any trouble*, or so long as the reader has consciously to think about them, or to strain his memory before he can recognize and pronounce them. It reappears from time to time, when children meet with unfamiliar words, or language beyond their comprehension; but it is not serious in well-taught upper classes, nor need it be very serious in the middle of the school if good books are provided. Intelligent repetition and practice are the only means of overcoming this difficulty, but mastering it usually takes a long time.

(2) **Intelligent Reading** depends on ready *comprehension* or grasp of the author's meaning. By practice we attain unconscious ease in doing this; we read silently for amusement or information, and *take in the sense* of whole clauses or sentences at a glance. It is only in the upper classes, however, that the eye can be habitually and unconsciously so far in advance of the voice as to enable the reader to seize the idea conveyed by several words at once, and then express it without difficulty.

Intelligible and intelligent Reading should be aimed at from the first.

Even in the early stages, where the mechanical difficulty is most formidable, the teacher, after carefully going over the words with his class, and satisfying himself that the children can recognize them, should *read the sentence so as to show its meaning*, and add explanation and illustration. A fair degree of fluency and expression, and distinct articulation are essentials; but very expressive reading ought not to be expected, since a mere imitation of the teacher's intonation and expression is not a good test of the intelligent appreciation of the passage.

The difficulty in securing attention diminishes as comprehension becomes easy, though it does not follow that children will be attentive because the attitude makes no great demand upon them. As we go up the school also, the higher qualities of Reading should become more and more prominent. If so, *the teacher must transfer the energy with which he attacked the mechanical difficulty* in the lower classes, *to* a painstaking and judicious *cultivation of desirable graces* in his scholars.

Reading aloud intelligently and intelligibly is the direct aim of the Reading lesson in school.

A pupil can hardly *read as though he understood* what he is reading, unless he have some intelligent *comprehension* of it, and he must certainly know the *words* he reads. We therefore use reading aloud as a means of *developing* power in the pupil, and of *testing* the power he has acquired.

Marks of good Reading. Good reading consists in a "natural" rendering or "telling" the ideas of the author; it is saying what is in the book, as though one were using the words for himself, and without the book; it is "good speaking."

It depends upon (1) **Comprehension**, *understanding* what is read, and then on (2) **Expression**, under which several points may be included; they may be generalized as *causing the hearer to understand* what is read.

Good Reading is marked by *distinct articulation*, *pure enunciation*, *ease*, *fluency*, *refinement*, and *intelligence*.

Points requiring special attention. The mistakes a weak teacher is likely to make or allow, and the faults a class loosely taught is sure to fall into, come for the most part under the following heads.

Articulation is the jointing or relative placing of the organs of speech, so that syllabic (or even consonantal) sounds may be produced. **Enunciation** is the act of speaking forth, or of

utterance. Articulation and enunciation go together to make Pronunciation.

School articulation is often imperfect, and that for two reasons. 1st. Young children cannot articulate at will, because they have not yet acquired complete command over their vocal organs. *The teacher should help them by calling their attention to the position which is assumed by lips, tongue, and teeth when sounding different letters and words, and then causing them to imitate him.* 2nd. Older children sometimes fail to speak distinctly because of the careless or slovenly use they make of the speech organs. In this case, the teacher must *insist upon careful imitation of the pattern* he gives for each syllable, and for every word. The general remedy for these defects is "a proper gymnastic training of the vocal organs" during childhood; such training is best provided by *abundant practice with short words*, and sentences made up of short words, which should be slowly and carefully gone over with the teacher; *consonants should receive especial attention.*

Among the commonest instances of faulty pronunciation are:—

Aspirate omitted or wrongly introduced. This is the most "widely diffused fault of English pronunciation." Frequent practice, and the occasional employment of selected sentences, with constant careful attention, are the best means at the teacher's disposal in this matter. As much attention must be paid to misplacing the aspirate as to omitting it. Simple aspirate *h*. When air passes through both the mouth or nostrils simply as so much ordinary breath, the result is the sound expressed by *h*. Now, though *h* is a letter, the sound it indicates is not a true articulation, it is simply so much ordinary breath expired.

Omitting letters and even syllables. Final g left out, gives "*singin'*" for "singing"; do not, however, fall into the opposite error of calling the word "*sing-ging.*" In long words, syllables are sometimes missed; *e.g.*, *u* in "particularly."

Omission or slurring of allied sounds when they come together; "facts" pronounced as if it were "*fax*," "this shrub" as *thishrub*," "cast stones" as "*castones*," and "fixed star" as "*fixstar.*" Words are "run into one another," instead of being pronounced separately, and it may be, with a degree of careful effort.

Introduction of redundant letters and syllables. A final *r* is often thus introduced; "saw" becomes "*sawr.*" "Tremendous" also becomes "*tremendious*," and "umbrella" becomes "*umberella*" or even "*umberellar.*"

Provincialisms can scarcely be called faults where educated men and women throughout a district use them. The teacher should furnish a

model of standard pronunciation in his own speech. Where local habit misplaces *w* and *v*, or where other vulgar errors obtain, the teacher must combat them resolutely. But unless provincialisms degenerate into vulgarisms, it is a mistake to spend time over them which may be more usefully employed in other ways.

Tone and Manner. *Pitch*, or key, is often too high, and occasionally too low. *Force* also is too great or too little; the child's reading is too loud, or not loud enough, and the general *style* is poor.

Mechanical drawling, a tame *monotony*, and a *laboured style* are too common.

The broad remedy for this is to secure *comprehension* of the piece read, and some *sympathy* with the writer, and with his creations. Preliminary explanation, illustration, and *pattern reading* by the teacher should secure the requisites. The child should then be called on to read the sentences and to imitate his teacher as closely as he can. Something may be done, by occasionally allowing children to read interesting *lessons with which they are already acquainted. Recitation* will also help, if it be well done. *Poetry* and *dialogues* are aids, provided they are well-managed, but not otherwise.

Grapple vigorously with this fault, for if neglected, it will spoil the reading of the school.

Emphasis is the prominence given to certain words or clauses in a sentence, which helps to make the meaning clear, and adds force to the reading. **Accent** is the stress laid on syllables.

It is produced by *anything which calls special attention to the desired part*, such as prolonging the sound of words, more deliberate or solemn utterance, greater stress, altering the tone to harshness or to a whisper, pausing before or after a word, high or low pitch, and in other ways.

The necessity for emphasising the proper words can easily be shown to children. They can be made to see that the idea conveyed by a sentence may be entirely altered by altering the emphasis; (*e.g.*, the question, "*Do you walk to London to-day?*" may have five different meanings according to the word which is made emphatic.) The reader must grasp the meaning of his author before he can distribute the emphasis justly. Too many words must not be made emphatic, or the fundamental condition on which emphasis depends is violated, and the reading will be stilted and pompous. Let the teacher *show his boys how* to place the emphasis, and then *see that they carry out his directions*.

Rate. When children can read fluently, they are always tempted to read rapidly; *they mistake rapid reading for good reading.*

Insist on due deliberateness; never allow a child to read more rapidly than an intelligent person would speak. Part of the correction will properly consist in the teacher showing the absurdity of racing over the reading. There is truth in the odd couplet :—

> "Learn to read *slow*, all other graces
> Will duly follow in their proper places."

Pause is a chief aid to expression. "The two keys to good Reading are *Pause* and *Emphasis.*"

In the early stages children should be required to "mind their stops." Advanced pupils should be taught to regard the *sense* of what they are reading, and to pause accordingly. Notice that we *may* pause between each limb of a sentence. By pausing judiciously, *the reader husbands his stores of breath*, and is able to read for a longer time without fatigue, and to spare the breath that is wanted for the aspirates when they occur. He is able also to let his eye be in advance of his voice, and thus he can better comprehend the meaning of what he is reading.

Inflexion and Modulation are closely connected. With Emphasis they make Reading *expressive.*

If children could "read as they talk," they would employ such modulations, inflexions, and shades of emphasis as each part requires in order to express the author's meaning exactly. But this demands an insight and rapid perceptivity of relation of which learners are incapable; they cannot yet unravel the complexities of an involved sentence in their own minds, and are still less able to express the sense of the piece by delicate variations of modulation and emphasis.

In school, we frequently hear a monotonous, sing-song, "lesson-saying" style kept up throughout a sentence. To some extent this is inevitable during the mechanical stage. To correct this, let the children see what the sense of the piece is, and then ask them to *tell* you. The difference between their styles of reading and speaking will thus be made apparent to them. Now *show them how* to read the sentence, then *make them imitate you.*

Methods of teaching Reading. The different plans which have been used, all of which have been successful in the hands of competent teachers, may be conveniently dealt with as *Synthetic* and *Analytic.*

Note at the outset, that *all these methods deal with the early and mechanical difficulties* of reading, and any specialities that may have come out in the preparatory stages. Methods *coincide in practice* after children can pronounce words at sight, or when they can generalize correctly about the powers of letters in combination. Modern plans aim at helping the learner's progress by *diminishing his early difficulties.*

A. Synthetic Methods commence with *elements;* after these have been taught and learned one by one, they are *combined* on a plan; the teacher would begin with what is easy and proceed to what is more difficult.

The elements differ in the various Synthetic Methods, but *the broad plan or principle of procedure is the same* in all.

I. The Alphabetic or A B C Method. The elements in this case are the *letters*, which are learned first, and under their ordinary conventional names. Letters are then *combined into syllables and words*, which the pupil *spells* and *pronounces.* Combinations of greater difficulty are gradually introduced, and the process is continued until the pupil can read and spell readily.

Remarks on the method.

(1) It has the sanction of long usage.

(2) As in all good synthetic teaching, difficulty is graduated, or can be graduated.

(3) Many of the combinations which children are (or were) required to learn, are meaningless; *e.g.*, *ab*, *eb*, *ib*, *ob*, *ub*, as in Mavor's or any other old spelling-book.

(4) Objection is often made to the method, inasmuch as the names of letters furnish little or no help in determining the sounds of words. For example, *bee oh-w(h)y* gives no clue to the pronunciation of the word *boy;* also *be-you-tea* should spell *beauty* rather than *but.* The sound of the same character not being invariable, a child cannot be sure he is giving the correct pronunciation even after he has spelled a word; this is the most perplexing point for learners. Edgeworth says, "As it is usually managed, it is a dreadful task to learn, and, if possible, a more dreadful task to teach, to read. With the help of counters, and coaxing, and gingerbread, or by dint of reiterated pain and terror, the names of the six and twenty letters of the Alphabet are firmly fixed in the pupil's memory. *So much the worse.* All the names will disturb him if he have common-sense, and at every step they stop his progress." Two points may be noticed in reply. *1st,* Children do not in practice feel the

difficulty to the extent alleged. *2nd.* The Alphabetic method "does not pretend to be phonic, When it takes the spelling of words along with their sounds, its object is simply that the spelling may be learned with the reading." (*Currie.*)

(5) This attempt to teach reading as a result of spelling "inverts the natural order." We spell well because we can read well. Reading comes first, then spelling. Both depend mainly though not entirely on visual memory; the ear may help. In order that the impression on the memory may be decided, there must be a certain amount of repetition of the impression. This repetition is best secured by frequent reading. "Spelling rests on a habit of the eye which is best acquired by frequent reading."

(6) Children in learning to talk use words; we do not begin with letters in their case. Some hold, therefore, that it is more in accordance with the natural order to begin with words in learning to read. Letters are almost meaningless to children.

(7) With teachers of ordinary calibre the method is usually very tedious. So great is the tedium, that children often acquire a dislike for reading. The method, however, is only partially answerable for this.

(8) *Note* that reading and spelling are taught together; the prominence given to oral spelling in teaching reading is remarkable.

II. The Phonic Method has for its elements the *sounds or powers of the letters*, and not their conventional names. It tries to enable the pupil to pronounce words by pronouncing their parts separately, or to give the sound of an entire word, by uttering the constituent parts of the sound in succession, and in proper order.

In the Alphabetic Method the *name* of the letter is taught with its form; in the Phonic Method the *power* of the letter is associated with the form.

The first point therefore is to *teach the sounds* which the characters represent; the next to *use these sounds constructively* in pronouncing words. *Analysis of a word sound* into its elements, and then *recombining its sound-parts*, would be a frequent device in practice.

Illustrations. "The word *me* may be printed on the blackboard, and the pupils taught to pronounce it distinctly. Then they may be requested to say *me*,—but to keep the lips closed, so that the sound of *e* cannot be made. The pupils may (now) be told that the sound which is made in beginning to say *me* is the sound of *m*." (*Calkins.*) Now cause them to

repeat the *m* sound three or four times as the teacher points to the character; also "let the pupils pronounce the words *aim*," *make*, and other words in which *m* occurs, "prolonging the *m* sound."

Or the teacher might choose such a word as "*mat*," and endeavour to isolate the sound of each letter in it, "*ŭ*l*m*—*ă*—*t*l*ĕ*," that he may show the power which each has. He would try to give the consonantal sounds with the least possible vowel sound attached. A common device for calling attention to the sound required is to introduce the picture of some common animal or object whose name contains the sound.

He would pronounce the word "*mat*," and would cause the pupils to notice the position of the vocal organs (the lips in this case), as he sounds the first letter, "*m*." He would also give the sound "*ŭ*|*m*" of the letter by itself, and would require the children to imitate him in articulating it.

Then he would show the picture of the sound, *i.e.*, the letter "*m*." To impress both sound and form on the minds of the children, he would require them to pronounce or articulate it frequently, to find the character in other places on the lesson sheet, to draw it on their slates, and to form it with pieces of wood supplied for the purpose.

He would select other words in which the same sound occurred, and would require the children to pronounce them after him, in order to enlarge their acquaintance with the sound and the appearance of the letter.

The powers of the other letters in the word might be taught in the same way.

Reading lessons and books have been prepared for the system.

In these, *various devices are adopted for indicating the special sound a character has to bear*. Among these are *diagraphs*, or double letters, to indicate simple sounds such as *ee*, *ai*, *au*, &c.; *diacritical marks*, as ō in *civic*, s in *seas*, &c.; *italics*, or *hair-lines*, or *small type* to show silent letters, as *p*sa*l*m, psalm, $^{\text{P}}$sa$^{\text{l}}$m; *k*now, know, $^{\text{k}}$no$^{\text{w}}$. Robinson, of Wakefield, had as many as sixty-five different characters in his alphabet; all of which, however, are either the ordinary letters marked or unmarked, or else compounds of them; he uses no absolutely new characters.

Remarks on the method.

(1) It is likely to secure careful and accurate articulation and enunciation. But "the attempt to utter the sounds of *d*, *p*, *m*, with the smallest accompaniment of vowel sound tends to produce stammering." (*Teacher's Manual*, National Society.)

(2) Theoretically the method is correct; the sound of a whole is constructed out of the sounds of its parts.

(3) Reading and spelling are taught together, as in the Alphabetic Method.

(4) Perhaps it is more likely to evoke the interest of the pupils than the Alphabetic Method; this, however, depends on the teacher.

(5) "Such a method is nothing but a variety of the Alphabetic Method with other names to the letters." (*Gill.*) Yet the sounds or articulations of the letters on the Phonic Method furnish a nearer approximation to their true sounds than on the Alphabetic Method; they therefore furnish a greater aid in pronunciation.

(6) A grave objection is that it is practically impossible to isolate the constituent sounds which make up the sound of a word. It then becomes impossible to construct the entire sound from its elements.

(7) It is open to the same objection as the Alphabetic Method, that the sound of the same character is not invariable; consequently the child will be bewildered by the different sounds, and the occasional absence of sound, of the same symbol. If every letter had one invariable sound, and that sound could be isolated, the Phonic Method would be practically as well as theoretically effective. Robinson and others have tried to meet this by a greatly enlarged alphabet, and it is claimed that, in spite of the increase, children yet learn to read more quickly than on the old plan.

(8) Many words in frequent use are anomalous in their pronunciation, and could not be taught phonically so early as their importance warrants; *is*, *to*, *too*, *two*, *one*, will serve for examples. All such words are practically learned as *wholes*, *i.e.*, in accordance with the principle of the Look-and-Say system.

(9) In the hands of some teachers, good results have been obtained by this method, but pupil teachers, on whom much of the early work falls, are often unable to use the system with effect; it appears to be too elaborate for ordinary use.

III. **Phonetic Methods** require alphabets in which *every elementary sound in the language is represented by a separate symbol*; the *sound of the same symbol or letter is invariable.* "One sound, one sign."

Phonetic characters are used until the children can read fairly on the system, then books printed in the usual form are introduced.

The Phonetic *alphabet would be taught first*, prominence being given to the *sounds or powers* of the characters, as on the Phonic plan. Next the *elementary sounds would be combined* to form the sounds of syllables and words, the teacher proceeding from simple

to difficult, and continuing until pupils can read fluently from books printed phonetically. Then would come *books printed in ordinary type.*

Remarks on the method.

(1) Is rigidly synthetic as compared with the preceding methods.

(2) Demands a largely extended alphabet. The greater number of letters would so far augment the teacher's difficulties. But it is maintained that when the child begins to read, he is not bewildered by the multiplicity of sounds which the same character bears on the ordinary system; also that being freed from uncertainty about the sound of each character in combination, after he has once learned its power, he learns to read rapidly and with confidence.

> *Various alphabets* have been proposed, in which the number of letters varies according as theoretical completeness or practical simplicity predominated in the minds of their constructors. About *forty* symbols are usually employed; the ordinary alphabet is used as far as possible, and allied sounds are represented by letters which resemble one another; the different sounds of *a* in *a*pe, *a*pt, and *a*lms, for example, would be symbolized by different letters, which yet had a general similarity.

(3) It postpones a difficulty with ordinary type, which children must master after all. Two things have to be learned instead of one. To this it is answered that the first is learned with comparative ease, and that the power so acquired can be readily employed upon the second, which is essentially like the first, though differing in detail. Mr. Spedding, writing in the *Nineteenth Century* for June 1877, says that, "children who began with the phonetic, could read and spell in the ordinary orthography both sooner and better than those who went by the old road."

(4) Up to the present, comparatively few teachers have used the plan. Some of these seem to have been very successful, apparently, however, because of their earnestness and more than average teaching ability, rather than from inherent excellencies in the method itself.

(5) The appearance of words is often greatly altered. Especially is this the case where phonetic spelling is fully carried out. On this account, it is not likely that ordinary type and ordinary spelling will be superseded. Trench objects, with others, that the etymology of words would be further obscured by phonetic spelling; Max Müller, on the other hand, does not see much force in the objection. It must be noted too, that pronunciation of the same word varies greatly in different parts of England, and that another difficulty is here introduced.

Word-building, as now employed in the teaching of spelling, is a method of teaching reading also. It is based upon the possibility of evolving many words from a common form by changing primarily the initial or final letters. If the exercises are well graduated, progress is easy, and consequently rapid, though anomalous forms are still hindrances. The following table illustrates a few simple sounds with the words built upon them.

at.	et.	it.	ot.	ut.
cat	bet	bit	cot	but
fat	get	fit	got	cut
mat	jet	hit	hot	hut
rat	let	kit	lot	nut
vat	met	pit	jot	put
	net	sit	not	rut
	pet		pot	

B. **Analytic Method**, or "**Word-Method**," or "**Look-and-Say Method**," or Method of **Reading without Spelling**. The fundamental principles of this method are (1) *Words*, not letters, *are the units of language*; (2) *Practised readers have formed mental pictures of words*, which they have associated with word sounds and word meanings; (3) Reading consists in *recognizing the identity* between the appearance of words in a book and the remembered picture of the same words in the mind, and then in *pronouncing* the word, and *attaching its associated meaning* to it.

The method, therefore, deals first with whole words, and analyses them later on. It thus differs essentially from the Synthetic methods. Reading is taught by calling attention to the *general appearance* of words. The sounds of words as a whole are associated with their forms as a whole. Learning the alphabet is, in strictness, no part of the "Look-and-Say" method of learning to read; it comes at a later stage, and incidentally rather than directly.

Illustration. The teacher, having a lesson sheet containing short sentences made up of selected words, reads a sentence slowly, and points to each word as he says it. (*Look and say.*)

He requires the class to read the same sentence simultaneously as he points to the words. He then calls on one or more individuals to read the same sentence in the same way (*Look and say*). He tries to secure careful *attention*, and to impress what is taught by frequent *repetition*.

He may test the success of his teaching so far, by asking the pupils to pronounce the same words as he points to them in other parts of the sheet.

This process is continued until the pupils acquire fair power in pronouncing words at sight.

As the children become acquainted with words, *they notice differences* between dissimilar words, which yet have a general resemblance to one another. (*e.g.*, *board* and *broad*, *though*, *thought*, *through*, *thorough*.) Analysis begins here, and knowledge of the alphabet will now be useful in pointing out the differences. Most teachers spell the words in these cases.

In the early stages, the teacher uses lesson sheets. When the children *begin* to read from books, they are required to *point* to each word as they pronounce it, with a view to greater concentration of attention upon it. Early lessons are made up of familiar words.

Practice gives the pupils experience of the powers of letters in combination. They apply the power thus gained to new cases, and in time are able to read well.

Remarks on the Method.

(1) It is natural, inasmuch as it is analogous to the process by which the child becomes acquainted with spoken language. In learning to speak, we use words as a whole; in learning to read on this method, we use materials (words as a whole) with which the child is already familiar in one aspect, for they form part of his vocabulary; he uses them in speaking, "In acquiring speech the ear catches the sounds of words as wholes, and associates the sense with them without any analysis; so in reading should the sound and sense of words be associated with their forms as wholes, without any analysis for that purpose. The eye does in the latter with the forms, what the ear does in the former with the sounds." (*Currie.*) In fact, reading depends essentially upon the eye.

(2) It is still a matter of dispute whether children acquire the power of pronouncing new and unfamiliar words more readily by this or by the synthetic methods. There is little doubt that the pupils form ideas as to the powers of letters in combination as they learn to read, and they apply their acquired ideas in new cases as surely whether they have been taught on one method or on another. But inasmuch as more

practice is given from the first in sounding letters in combination by the "Look-and-Say" method, it is reasonable to conclude that correct mental generalizations are arrived at sooner when this method is employed, than in other cases.

(3) It is certain that we cannot read, until we at once associate the appearance and the sounds of words as a whole. Many very common words are really learned as wholes, whether we profess to teach on the "Look and Say," or any other method.

(4) Unless the teacher be careful, *a habit of guessing is likely to arise in the earlier stages.* In addition to the needful determination on his part, he must cultivate careful observation of the forms of words, to correct this tendency. Oral spelling and transcription will help him here.

(5) The method is rapidly growing in favour with teachers.

A wise and capable teacher will **make a method of his own,** embodying the excellencies and excluding the defects of all the methods he is acquainted with, so far as this is possible.

The best method will be elastic; it will bear some strain, and will admit of adaptation to classes and circumstances.

Reading will be taught best by *adopting the "Look-and-Say" method as a basis.* But *good features from other methods should be incorporated; e.g.*, children should frequently be required to spell words after reading them; the careful attention to articulation and enunciation which is fostered by the Phonic method ought also to find a place in every system for teaching reading.

It may be useful to **summarize** some chief points in the form of an answer to the question, "*On what principle is Reading best taught, and what broad instructions will you give to your pupil teachers for dealing with the subject?*" The following outline is offered.

Principle. (*a*) Good reading consists in an immediate, and practically unconscious or automatic association of word-*symbol* (printed or written word) with word-*sound*, and both with word-*meaning*; this is followed by an intelligent rendering of the *sense* intended to be conveyed by the piece read. *Eye, ear, memory*, and general *intelligence* co-operate.

(*b*) *Words*, not letters, are the elements of speech. Children use words in talking, before they can read; they are therefore familiar with one aspect of words before school-life begins. As it is well to *use the learner's present knowledge as a starting-point*, or to proceed from the known to the unknown, early lessons should be directed to mastering *words* as wholes

before attempting to deal with their elements. Analysis and closer attention to details properly come later; *pronounce words first, spell them afterwards* if necessary.

> Experience has shown that acquirement is rapid where this principle is properly applied, especially if the teacher insists on attentive looking, careful articulation and enunciation, attention to details after whole words, comprehension of what is read, and reasonably intelligent reading.

To pupil teachers. (*a*) Bring *form* (eye), *sound* (ear), and *meaning* (intelligence) of words constantly before the pupils, and connect one with the other by abundant varied *repetition* until all are well fixed. *Attention*, or concentration of mind, must be secured, or nothing will really be done.

(*b*) *Form.* Insist upon **careful looking**, teach children to use their eyes. With young children especially, employ devices which will cause them to look attentively, such as requiring them to point to words as they read them; print the word for them on the black-board, and let them print it occasionally, having the *entire word* before them as a copy; let the word grow or be built up under their eyes, and bring in the hand to help the eye.

(*c*) *Sound.* The word should be pronounced repeatedly while the children look at it, but try to vary the forms of repetition. Notice articulation, enunciation, aspirate, final *g*, &c.; see that every word-sound is given clearly and correctly. Enable children to **recognize and pronounce words at sight.**

(*d*) *Meaning, Sense.* Let children **understand** or **comprehend** what they read. This is often brought about best by the *teacher's simple reading;* sometimes, however, *illustrations* or *explanations* of words, clauses, and sentences are wanted, and *paraphrase* and *definition* may help at times. *Questioning and requiring children to express ideas in their own words*, must be frequent. Do not overload the lesson with too much explanatory matter.

(*e*) **Teach reading,** *do not "hear" it only.* Leaving details, good teaching requires (1) that children shall be enabled to recognize the words in each sentence, and to pronounce them at sight, or that the *mechanical difficulty* of each part should be removed; (2) that they shall *understand* what they read; (3) that *mistakes shall be carefully corrected*, as advocated in next paragraph; (4) that the teacher shall insist on an *intelligent rendering* of the meaning, after he has made it clear, or that the child shall be made to read as though he understood what he is saying.

Dealing with Mistakes. Many faults will be *prevented*, if teachers are careful to secure *comprehension*, and to overcome the mechanical difficulty before the child is required to read. If mistakes are made, however, **correct them carefully.**

As a rule (1) *Cause the child to "see" (perceive) his fault;* exemplify it, even exaggerate it to make it evident. (2) *Show what is correct, or how to remedy the fault;* the teacher's pattern is commonly the best means. (3) *Cause the child to correct his mistakes*, and to read properly.

Try to *show exactly where the fault lies;* put your finger on the weak spot.

Two forms of so-called correction are to be avoided.

(1) No good purpose whatever is served by hearing a child read, and then saying, "*That's bad; go on, next boy.*" Show him rather *wherein* or *why* his reading is bad, and *teach* him to correct it.

(2) Little good is done by enumerating a whole string of mistakes; *this bewilders, but does not teach.* After a paragraph is finished, some teachers tell their pupils of "*words left out,*" "*words put in,*" "*words mispronounced,*" "*reading too fast,*" "*reading too low,*" "*kept the voice up at a period,*" "*did not let the voice fall at a comma,*" "*did not emphasize the words,*" and many other faults of omission and commission.

(3) The practice of making pupils read the sentence over again before correcting their errors, especially those where words are miscalled is not desirable, as in most cases the error is simply repeated.

Keep a *sharp look-out* for all faults, but *use judgment in deciding which to deal with.*

It may do harm to stay and alter every minute point; the lesson would become finical and tedious. As a rule, *avoid stopping children's reading* to correct a fault, though this is sometimes needed.

When reading is generally faulty, or where many children make the same mistakes, *attend to one fault at a time.* After this is overcome, attack another, and so conquer all in detail.

We repeat that *the teacher's* **pattern-reading** is the best exemplar of excellencies and pointer to defects.

It really *sets the standard* for the school.

Teaching the Alphabet. The teacher must try to make this

stage as interesting as he can. His object will be to complete the association between form, name, and power of each letter as soon, and as pleasantly as possible. He must take into account the tender age of his pupils, and the mental and physical peculiarities inseparable from it, such as their love of novelty, and their inability to bear long-continued and exacting mental strain.

Horace Mann remarks that, "as a general rule, six months are spent before the twenty-six letters are mastered, though the same child would learn the names of twenty-six playmates or twenty-six playthings in one or two days." Can we, whilst maintaining the necessary undercurrent of seriousness which properly belongs to school-work, yet so deal with the alphabet as to make the letters like playthings, and learning them like play to any degree?

The following plan aims at varying the forms of repetition, and enlisting and utilizing different powers for a common end.

The teacher prepares a sheet of letters printed in large type; whether he will confine himself to small letters, or will teach capitals also in his early lessons is a matter for his own judgment. He also has single letters printed on separate pieces of card-board, and obtains a box of small thin sticks, or wires, with which he may build up the letters. Pictures of objects whose name contains the special letter to be taught, or the initial of whose letter-name is required, are useful. A jointed lath, such as Kindergarten teachers use, will be valuable also. The teacher provides himself with black-board and chalk, and sees that each child has a slate and pencil.

(1) He arranges the letters according to their *forms*, p, q, b, d; I, H, T; E, F, L; &c. This classifying enables him to use Similarity and Contrast in pointed style when teaching, and is greatly to be preferred to the old plan of saying the letters in orderly rotation.

(2) He introduces the simplest letter of one group, and gives its name or sound. The pupils are required to *pronounce* it simultaneously and individually, to *point it out* on the sheet, and to *find it* amongst the loose card-board letters. Then he might *draw* it on the black-board, naming it or sounding it, and getting the children to do so many times during all the exercises. He might also *bend the jointed lath* into the letter shape, or let a child try to do it. The learners may also be asked to *make the letter on their slates*, or to *build it up with small sticks*. Much may be done incidentally, by using the letters as *objects in lessons on form*. (Ratich advocated writing each letter in red ink, and causing the child to write

and pronounce it many times. Locke suggests using *cubes or dice*, on each of whose faces a letter should be pasted, so that children might be challenged to name the letter which came uppermost; he thinks too that a *polygon* of twenty-six sides might be used for the same purpose.)

Note that constant *repetition* of form and name in connexion tends to implant both in the same connexion on the memory. Also note that *eye, ear, voice, and hand, may be made to aid one another* in acquirement. As a further aid in the association, it is well also to have a sheet alphabet, in which pictures of common objects are placed close to the corresponding letters. A child will learn his letters more quickly and pleasantly, if he speaks of "'A,' for Apple;" "'M,' for Mother;" "Round 'O,' for Orange," than if he has nothing but the name and the form to associate, both of which are unfamiliar to him. "Make the shape attractive."

(3) When one letter has been thus thoroughly taught, he proceeds to another in the same group, showing the *difference* between it and its predecessor; perhaps the new letter may be made out of the old one.

In this way it is possible to teach the alphabet quickly and thoroughly.

Reading in a lower Class; hints for Pupil Teachers.

(1) *Preliminaries.* Prepare the lesson; make yourself acquainted with it beforehand, that you may be able to give undivided attention to the children as they read. Stand where you can see every member of the class easily, and place the children so that they may easily see you. Let the page be found, and then the books shown, to see that all are ready. Cause the children to hold their books properly.

(2) Endeavour to arouse interest in the coming lesson by a word or two of *introduction.*

(3) *Teaching words.* The mechanical difficulty is serious at this stage, and had best be attacked first as a rule. Be exceedingly careful to *enable children to pronounce the words at sight;* do not set young learners to the impossible task of reading words they cannot know. *Go over each sentence with them word by word,* and point to the words if a card be used. The words may be taken in any order at first, or the children may point to each word as you say it, if they read from book: see that *all* point, whether the reading be simultaneous or individual; *secure careful looking.* Pointing should be discontinued as power grows. Insisting on children spelling words from or without their books, or writing them on the black-board will encourage careful looking.

Repeat this exercise with judgment, but do not allow it to become tedious. As early lessons are made up of short sentences, there need be little difficulty in avoiding tedium. Do not iterate in this unintelligent

fashion :—*the, the, the*—*boy, boy, boy*—*is, is, is*—*good, good, good;* read the *sentence*, call children to point to words, and so on.

Attend to articulation, enunciation, aspirate, final *g*, and general purity of pronunciation, so far as the learner's power will allow; *let ear, eye,* and *voice be well used.*

(4) *Teach the meaning of the sentence;* enable the children *to read intelligently.* Separate words and phrases must be explained and illustrated in simple language, and the meaning of the sentence as a whole made clear. This can usually be done by the teacher reading the phrases and the sentence with proper or perhaps exaggerated emphasis, inflection, &c. Questioning is indispensable.*

> N.B.—*The order in teaching here mentioned is often and properly inverted;* the meaning of a sentence is frequently taken first, partly because it helps in dealing with words, and partly because the exercise is rendered more intelligent. Still more often are the processes intermixed, and words explained as they are met with. Both are essential; children must be enabled to pronounce words at sight and to understand what they read.

(5) *Practice in reading.* The pupils must now *read* the sentence *as they would talk,* sometimes collectively, sometimes individually; this exercise must usually be repeated *several times.* Perhaps it may be necessary to have clauses or parts read separately, as a help to reading the whole sentence.

(6) *Correcting faults.* Deal with these *one by one;* do *not be too exacting* with young children, but *keep them up to the mark.* Let the fault be *corrected by all, as well as by the individual* making it. Remember that *bad habits* formed in the lower classes *cling* to the pupils as they go up, and are more difficult to get rid of after they are acquired; care should be taken to *begin well.*

Go through the lesson sentence by sentence on this plan. You may adopt any device which you think will introduce *variety*, or intensify *interest.* For example, you may ask a good reader to read a sentence *first*, instead of reading it yourself, letting him and his classmates feel that this is a species of reward.

There *may* be a little *oral spelling* after the lesson is finished, and indeed

* It has been suggested that the meaning could be brought out, and intelligent reading secured, by giving a few questions which should be answered in the words of the book. This is contrary to the generally received principle, but it might do good special service. For example, *The boy threw a stone into the pond* might be thus dealt with — *Who threw the stone?*—*What did he do?* – *What did he throw?* — *Where did he throw it?*

after every sentence, all the boys except the pupil who is challenged being allowed, but not encouraged, to look at their books whilst the word is spelled. Give no excuse for making mistakes.

The object in a reading lesson is to teach reading, and this is best done by *practice*. Sufficient time must be given to illustration and explanation that the child may know what he is doing, but as much time as possible should be spared or made for actual practice in reading. Let *as much* be read *as can be done well.*

Reading in an advanced class, or in a class above the middle of the school.

The mechanical difficulty will be greatly diminished, and in the highest classes will have disappeared; reading lessons ought now to be lessons of *information*, and means of cultivating the *taste*, as well as helps to *good reading.*

The *higher aspects of reading* should be cultivated; the sense of an extract should be rendered with appreciation, sympathy, and general adaptation to the style and sentiment of the composition. Pattern reading will be directed to this, and elocutionary rules for pause, inflection, &c., may perhaps be introduced in the highest class, but always in subordination to the general rule, "*Render the sense in a natural style;* read as you would talk."

As illustrations will cover a wider range and can be of a higher character, the teacher's *preparation must be more careful* and painstaking.

(1) Give the boys five minutes to look over the lesson before the reading begins, that they may form some idea of its character, and may master the difficult words. The pupils may write down any words they think to be difficult. This preparation may also be well demanded as a home-exercise, and some teachers require children to underline in pencil a given number of words on a page. This has its advantages, but it makes the books unsightly.

(2) The teacher should go through the lesson with the whole class, correcting errors, furnishing the needful explanations and illustrations, and showing how the various sentences ought to be rendered, as with a lower class, but on a modified plan. He will use mutual correction, and perhaps have the most difficult word in each sentence spelt orally, to encourage careful looking as the sentence is read.

(3) The children ought now to know how the lesson should be read. To give the practice which is desirable, it is well to break up the section into small groups, placing one of the best readers to be monitor in each group; arrange the groups close around you, and pass continually from one to the other.

Silent Reading. This form of lesson is valuable in the higher classes in all cases where the discipline attains a satisfactory level.

The pupils are instructed to read in silence a set portion of any of the readers, either literary, geographical, or historical, used in the school; they are warned that they will be questioned as to the subject matter of the portion read, and they will be permitted to ask for explanations of any words or phrases which they do not understand. The teacher may vary the test by sometimes confining it to a discussion of the meanings of words and allusions, at other times by brisk questioning on the subject matter.

Unseen Reading. This is a method of examination frequently made use of by H.M. Inspector, and is warranted by the objectionable practice which used to prevail of allowing the children to read and re-read the same book, until they became so familiar with its words as to be able to repeat lengthy sentences from memory.

Reading and re-reading the same matter is unfair to the pupil, who having once mastered a book ought to be allowed to proceed to a more difficult one. In the higher classes the lessons in "unseen" reading may be such as deal with the reading of the works of standard authors, as Dickens, Scott, or Tennyson—school editions for preference—the reading of suitable extracts from ordinary newspapers, or from the excellent magazines now published for school use. The teacher will do well to look over the proposed passages previous to the reading, in order to be prepared with any requisite explanation, and he may, if absolutely necessary, give some instruction in the pronunciation of any words of exceptional difficulty which may occur in the reading, prior to the lesson. As only a few copies of the book to be read will in all probability be available, the attention of the class should be maintained by bright, vigorous questioning, and they should be encouraged to discuss within reasonable limits the subject matter read. The reader may stand in front of the class and must read deliberately, clearly, and with sufficient loudness. As the whole of the class, in the absence of other copies of the book, are dependent entirely upon his voice, they constitute a capital body of critics. The lesson is, therefore, a valuable means of cultivating self-possession, and of enabling the pupils to see the worthlessness of a hurried, inarticulate, or indistinct style of utterance. Unseen Reading need not be often taken; one lesson a week, if well prepared and vigorously given, will be quite sufficient. The teacher should be careful to see that only suitable passages are read, and that the attention of the class as a whole is well sustained.

Simultaneous Reading. In this exercise *intelligent reading by the class as a whole* is aimed at. *Explanation* and *Illustration* are required that children may *understand* what they read, and the *teacher's pattern* is, if possible, more valuable than ever.

Objects and advantages of Simultaneous Reading.

(1) It tends to encourage deliberate, distinct, and careful articulation, if the teacher is skilful and alert

(2) It secures uniformity in tone, inflection, rate, &c. The pupils will take their cue from the teacher in these things

(3) It "aids those who are weak, and gives confidence to the hesitating"

(4) The pupils get more practice by this method than by any other; this makes the plan valuable in large classes.

(5) It is a means of correcting faults which are common to the whole class. It is more effective as a corrective instrument, than as a means of imparting excellencies

Defects of the method.

(1) It is extremely difficult, and frequently impossible, for the teacher to distinguish individual faults.

(2) The individual taste is not cultivated so directly as by individual practice.

(3) Any fault, common to the class, which is allowed to pass uncorrected, becomes intensified by the general repetition *Tone, inflection, emphasis, &c, must be very carefully attended to* in the Simultaneous Reading lesson The teacher must be shrewd, and must have all his wits about him in this exercise, as it offers unusual facilities for individual carelessness It is dangerous to leave Simultaneous Reading in the hands of a weak teacher

Helps to good Reading in school. Whatever adds to the child's stock of words aids him in Reading One of the greatest difficulties teachers have to encounter arises from the limited vocabulary of children. Whatever makes Reading attractive is also helpful.

Learning by heart, abundant practice in reading collective lessons, grammar and analysis are valuable. Cultivate correct language in school.

A taste for reading can be fostered. Good interesting reading books can be easily obtained, and the teacher may secure appreciation of good

reading by having the reading well done, and showing wherein or why it is good. Reading to girls during sewing lessons, and to the whole school for half an hour on Friday afternoon is useful. A school-library of books, such as children like, is also a great help.

Reading Books.

The paper must be stout enough to prevent the printing on the other side of the leaf from showing through. The type must be clear, and of sufficient size. Cohn attributes the increase of short-sightedness in Germany, largely to bad paper and bad print in low-priced books.

Lessons must be graduated; difficulties introduced systematically, and only a very few at a time. Early lessons must be easy; no lessons should be beyond the learner's powers, but none so simple as to require no effort.

The matter should be interesting and varied. For little children there ought to be short stories, with tales about animals, and easy child poetry or rhyme. Higher up the school, tales and spirited extracts, travels and descriptive writing, poetry and good dialogues, make up the bulk of the book; "useful information" should have a place, but not so large a one as was allotted to it in the older reading books.

Pictures, maps, and plans should be abundant. Early books especially should be copiously illustrated. These not only give pleasure, but they are a great aid in forming ideas; they appeal to the eye, are seen, and are more likely to be remembered.

The binding should be as strong as possible, to withstand the wear and tear incident to almost constant use in the hands of school-boys.

Recitation.

This exercise not only strengthens the memory, but increases the children's familiarity with words; it therefore helps them in reading, and to some extent in speaking. Learning and repeating rhymes introduces beginners to new words; children can be taught to recite before they are able to read. Taste can be cultivated by selecting good pieces, and by having them rendered in good style. Moral lessons may often be conveyed in an attractive way by means of a verse. If a pupil be set to memorize and repeat a few well-chosen lines week by week, his acquirement becomes in time a valuable and ennobling possession.

The mode of teaching is analogous to that employed in teaching reading. Pupils have to *render the sense* of the piece. The teacher must therefore *teach the children to understand* what they say, and then *cause them to recite as though they understood it.* Words must therefore be explained; the meanings of clauses, lines, sentences, and verses must be unfolded; illustration, explanation, paraphrase, occasional definition, questioning,

and constant pattern by the teacher must be employed. Faults must be carefully corrected, and especial care and determination used to prevent monotonous repetition.

Sometimes children are encouraged, or are taught to employ action or gesture as they recite ; this may do good if well done, but not else, and it may easily be overdone.

The teacher's own Reading.

It is certain that the art of reading does not receive the attention it deserves from teachers. Yet it is of great use from a professional standpoint ; few accomplishments, for example, are more telling in school than the ability to read an extract in a style which compels admiration. Besides, pattern-reading is essential to good teaching ; children will not read better than you. The pleasure a good reader can give in the domestic circle should be a further incentive to cultivate the art of reading well.

SPELLING AND WORD-BUILDING.

Importance of the subject. Society demands correct spelling from an educated man.

Whilst the ability to spell correctly is scarcely considered to be a merit, inability is deemed a disgrace. There is little disposition to make allowance for failures in spelling; bad spelling is regarded as the mark of an inferior education. Therefore its importance cannot be over-estimated, and despite the difficulties of the subject it should form a part of the curriculum of all schools.

Uniformity in spelling is a modern requirement.

The habit of paying so much attention to spelling "is artificial and partly new." It is not uncommon to find the same word spelled in half-a-dozen different ways by the same old author.

"Systematic uniformity in spelling is hardly older than the time of Johnson's dictionary. He speaks of orthography as having been to that time 'unsettled and fortuitous.' In confirmation of this statement it may be noted that Tyndal (1447—1536) spells so common a word as '*it*' in eight different ways—*it, itt, yt, ytt, hit, hitt, hyt, hytt.*" (*Angus.*)*

Its difficulty. English orthography is peculiarly difficult.

* Skeat, in the introduction to "*Specimens of Early English*" (*Clarendon Press*), accounts for multiform spelling by the fact that old authors spelt phonetically; each tried to represent the sound according to his idea. Different notions amongst writers in the same district, and different pronunciation in different districts, would evidently produce great variety in spelling. The invention of printing tended greatly to give fixity, but was too weak and slow in its operation, especially in the absence of a recognized authority like Johnson's dictionary to settle the matter.

Appendix III. *Hints on Spelling*, in Abbott's *How to Parse*, explains some anomalies, and gives much useful advice.

(1) *The same symbol represents more than one sound.* The character "a" stands for five distinct sounds in the words "many," "fat," "fame," "father," "fall." In the same way "e" stands for two sounds, as in "mete" and "met;" whilst "o" stands for three sounds, "not," "note," "nor;" and "u" represents three sounds, "tub," "bull," and "rule." The letter "i" stands for two sounds, one simple as in "sit," the other really diphthongal, as in "fine." Nor is the sound of the consonants invariable; for example, the symbol "s" represents four distinct sounds in the words "sum," "sure," "eggs," "pleasure."

(2) *The same sound is represented in several ways.* The sounds represented by the italicized letters in the following words are identical; "busily," "women," "marriage," "guilty," "cribbage," "surfeit," "sieve," "breeches," "pretty," "money," "yellow." We have here instances of thirteen different modes of expressing the same sound in printed characters, and three of these methods occur in one word. We have other illustrations in "Pict" and "picked," "race" and "base," "philosophy" and "forfeit," "adds" and adze;" such cases are very numerous.

Adams summarizes thus:—"*Thirteen* vowel sounds are represented by *five* symbols, and the same thirteen sounds are expressed by (at least) *one hundred* expedients in the same language."

(3) *Letters are sometimes silent;* as "c" and "e" in "science," and "p" and "l" in psalm."

(4) *Simple sounds are represented by complex characters (two letters);* as in suck" "loch," "thin," "thine." Most of the so-called diphthongs are of this character, *e.g.*, "*laid*" (lade), "*awl*" (all), "guard" (gard), and many others.

(5) *Compound sounds are represented by simple characters (single letters),* as, "thine" (height), "lute" (few, suit).

Reasons for this irregularity. Most of the anomalies in English spelling are traceable to one or more of these causes,—(1) Imperfection of our alphabet; (2) Etymology; (3) Altered pronunciation.

(1) **Imperfection of our alphabet.** There are 41 elementary sounds in English, to represent which we have 21 effective letters. (The letters *c*, *q*, *x*, and, less evidently, *w* and *y*, are redundant.) Recourse must therefore be made to various *orthographical expedients*. A perfect orthographical system could only exist with a perfect alphabet, in which each elementary sound is represented by its own peculiar symbol. As examples of the orthographical expedients which we employ, we may mention—

(*a*) *E mute* at the end of a syllable lengthens the preceding vowel sound "nŏt," "nōt*e*."

(*b*) *A doubled consonant* at the end of a syllable denotes that the preceding vowel sound is short, "cāre," căr*ry*."

But even such rules are not invariable.

(2) **Etymology.** Roots influence the spelling of derived words; *e.g.*, "*city*," is pronounced "*sity*;" but we retain the "*c*" to show the connection of the word with the Latin word "*civis*." So also each "*ph*" in "*philosopher*" is pronounced like "*f*;" but we endeavour by our mode of spelling the word, to indicate its origin in the Greek words, φιλος (*ph*ilos), and σοφος (so*ph*os).

Pronunciation often overmasters etymology, and determines the spelling; *e.g.*, "*fancy*" (phantasy), "*coxcomb*" (cock's-comb).

Some words are sounded alike, but are different in meaning. Sometimes these words are from the same root; as "*check*," "*cheque*;" "*canon*," "*cannon*;" and sometimes from different roots; as, "*son*," "*sun*"; "*hair*," "*hare*." It is felt to be desirable to indicate this difference in meaning by maintaining the difference in spelling.

Differences in spelling are sometimes traceable to the mode in which words were introduced. Ben Jonson (1573—1637) uses the word "*humorsome*," which he derives at once from the Latin "*humor*." The form "*humoursome*" is derived through the French, and is connected with the French word "*humeur*." The forms "indepen*dent*," "pen*dant*," are explained on the same grounds.

Many irregularities in spelling and pronunciation are owing to the Norman-French element in our language. The following words, in which five different modes of representing the ē sound appear, will serve for examples: "est*ee*m," "rec*ei*ve," "rel*ie*f," "fat*i*gue," "p*eo*ple." (*See Meiklejohn's Diagrams.*)

(3) **Altered pronunciation.** Languages undergo changes in course of time. Words alter in sound and in spelling. But the changes in form do not always harmonize with the alterations in sound, and we have in this circumstance a not infertile source of difficulty in spelling. Such words as "*moved*," "*knives*," were formerly pronounced in two syllables, the vowel in the termination is now silent. "*Obey*" and "*tea*," "*began*," and "*ocean*," and many other pairs of words, quite as dissimilar in modern pronunciation, appeared formerly as rhymes.

Pronouncing dictionaries do not agree as to the correct pronunciation of certain words, and there is a corresponding difference in the practice of educated men. Such words as "*leisure*," "*knowledge*," "*schedule*," "*neither*," will serve as examples.

The acknowledged irregularities and consequent difficulty of English

orthography, and the impossibility of reducing all cases to a reasonable number of rules, have led to various schemes for modifying the spelling to suit the sound. The idea is not by any means new. "Several attempts were made in the 16th century to reform the spelling of English." For centuries it has been thought "necessary to effect a compromise between orthographical and orthoëpical systems."—(*Marsh's Lectures.*)

Spelling depends more upon the eye than upon the ear. In this respect it resembles reading; in fact, good reading and good spelling usually go together. The child who can read well is generally an adept in spelling. The difficulty in reading and in spelling is identical in the main.

When we are in doubt as to the correct spelling of a word, we frequently *write it down,* and the *eye* determines whether it is correct or not.

When we have made fair progress in *oral spelling*, the "mind's eye" really constructs a mental picture of the word which we hear; and we then spell it letter by letter from the mental picture. "A person cannot spell by thinking how a word *sounds,* he must recollect how it *looks.*" (*Parkhurst*, quoted by *Dunn.*)

General principle on which spelling should be taught. If the statements in the preceding paragraph be correct, it follows *spelling should be taught by appealing to the eye* rather than to the ear. Concentrate the pupils' attention on *word-forms*, by insisting upon *careful looking*, and by *repeating the appearance* of printed and script words. The *ear should be used* as a subordinate yet important auxiliary.

It may be well to remind young teachers again that in order to secure rapid progress in any subject, there must be *concentration of mind* or *attention*, and a certain amount of *repetition.* New facts should also be connected with each other and with the previous mental store by as many links of *association* as possible. The *natural quality of the mind* itself is of fundamental importance in modifying the rate of acquirement, but the processes here indicated are necessary for all minds. In teaching spelling, we require our pupils to *look* carefully at the words, or to *point* to them in order to secure the mental concentration which is needful. We cause them to do this again and again, in order to deepen the impression on the mind. We call their attention to the *printed* word, *we write* it on the black-board, we tell *them to write* it on their slates, and to *spell* it orally, in order that the mental result of each of these processes may be more permanent because it is associated with other impressions. These principles should regulate our action in all the subjects that we teach.

Therefore, use the *black-board* freely; cause children to *look carefully always*, to *write frequently*, and to *spell orally occasionally*.

Keep incorrect forms out of sight, at all events until children can spell well. The incorrect form, when it has been seen, is sure to have some mental persistence, and is likely to be obstructive in future.

Means of teaching, and of testing Spelling in school.— A. Teaching Spelling.

I. The Reading Lesson.

Require elder scholars to prepare a set portion, either at home or at school, under supervision. They can then notice the difficult words, and they should be allowed to write them down. Some teachers postpone this exercise until the *end* of the reading lesson : this is not desirable.

If lists of words are given at the head of the lesson, have these words learned ; but make such arrangements as will leave due time for the reading. Fitch deprecates accumulating the difficulties of a lesson in a menacing and artificial column ; he advises teachers to encounter them one by one as they arise, and try to conquer them in detail.

When no lists are given, five minutes may be well spent in allowing each pupil in turn to spell a word from the open lesson-book. The teacher may cultivate sharpness of eye and attention to detail, by requiring each pupil to spell the words of "more than one syllable," or "of more than four (or five) letters," in the order in which they occur in the lesson. This exercise may be made very interesting for a short time, and it encourages *careful looking*, which is the chief point.

As soon as a pupil has read a sentence, the teacher may with propriety call on him to spell orally any word in that sentence, sharply and at once. Boys ought, after a little practice, to be able to spell the words which they can read. Here also *careful looking* is encouraged ; the boy looks at the words as he reads, that he may be ready when his teacher calls upon him.

Words that are not known may be put upon the *black-board*, and be given in the dictation lesson afterwards.

If during the reading lesson a pupil fail to spell a word, he should be required to *look* at it. Insist upon all using their eyes well.

Note. Spelling is learned incidentally through reading more than by any other means. But it is not safe to rely upon reading alone. The cursory glance which is given to words as we read, is not enough to fix the details of their form upon the mind ; *spelling must be taught.*

II. Spelling lessons are not given so often as they might be, although good results follow where they are employed judiciously.

Attention should be paid to *rules for building up words*, such as omitting final *e* when a syllable beginning with a vowel is added (*love, loving*, &c.)

Etymology and spelling may be profitably connected in many cases. The teacher, however, should have a fair acquaintance with the structure of the language, should be provided with a good text-book, and should prepare his lesson and select his examples carefully.

Spelling and reading books can be made to do good service, the black-board being freely used when wanted. Many good modern spelling books are available.

Note. In spelling lessons, it is a good plan to group words which resemble one another in sound or in spelling, and to confine children's attention for a time to words that *conform* to a rule. Set these down so as to show their agreement; *do not confuse children by introducing exceptionally-spelled words*, before they can well bear them. A hint, given by Fitch, but employed independently by most thoughtful teachers, is, that where a difficult word occurs in the reading lesson, other words resembling it should be instanced also; *e.g.*, if *light* comes in, such words as *bright, might, fight*, &c., should be written on the black-board with it.

III. Transcription.

Many mistakes are made in little words. Short words are frequently very anomalous in their pronunciation. "The real difficulties of our spelling are nearly exhausted upon our monosyllables." (*Bain.*)

In writing a word, the mind is obliged to dwell longer on the relative situation of each letter, than when spelling orally. Transcription therefore is valuable as a means of fixing the forms of words in the mind; it is the best corrective for mistakes in short words.

Pupils should be required to *copy without mistake*, and in their best style, the extract which has been appointed. A mistake ought to be looked on as a serious matter; it must arise from carelessness, for the pupil can read and write before he is set to transcribe.

Transcription is a good occasional substitute for dictation in all classes. It is especially useful in junior classes, and where dictation exercises are badly done; in the latter case, children may copy a piece carefully, and afterwards be required to write the same from dictation.

When well conducted, transcription is a most effective exercise. But, *unless the work be carefully supervised and examined, transcription becomes worse than useless*; careless habits here become fatal to good spelling.

B. Testing Spelling. The following devices have *testing* for their primary and direct purpose. But they also serve as indirect teaching agents; so great also in their teaching value, that some

rely almost entirely upon them, and give scarcely any direct teaching in spelling.

If they come after teaching, they bring out defects, and show places still left weak. Further teaching will follow where testing reveals weakness. *Teaching and testing proceed side by side*, and with equal step.

I. Oral Spelling.

Should not be attempted until children are reasonably familiar with the forms of words, or until they can call up a mental picture of the word required. It is a mistake to make demands on the visual memory to which it cannot properly respond.

Oral spelling appeals to the ear, and adds a new group of associations to those formed by the eye; it thus gives no mean aid to spelling. It should, however, be *used with the black-board;* it then helps to concentrate the learner's attention on details of form ; the word is present, pupils look at it as a whole, and letter by letter; mental persistence of the word picture is thus favoured. Whenever oral spelling is employed, *write every word mis-spelled;* let the pupils *see* it, and, if need be, *write it for themselves*. The writer would allow, but not encourage, little children to look at their books, if they were not pretty sure about a word in oral spelling. At the same time, putting a little strain upon them will help them to recover the word, and will certainly intensify their looking when the word is put on the black-board.

Children must be encouraged and taught to break long words into syllables, and then to deal with these one by one, and in proper order. No little bad spelling is owing to bad practice here; a child will start a word correctly, but the remaining letters are jumbled together confusedly in his mind, and he commonly goes wrong in consequence; getting him to separate the syllables clearly is absolutely necessary. In proposing a word to be spelled—

The teacher should pronounce the word distinctly ;

The pupil should pronounce it ;

The pupil should spell it, making a pause between the syllables, but not pronouncing them ;

The pupil should again pronounce the word.

Oral spelling enables the teacher to go quickly over many words; it is a rapid, though not altogether reliable means of testing. Apart from its utility as a form of repetition, it cultivates concentration of mind.

Little or no good is done in the exercise, unless scholars have had a chance of preparing for it; if many mistakes are made, the lesson does harm. A *few* unusual words may be brought in during a lesson, if they are well dealt with. Old lessons must be often repeated.

Note that oral spelling is rarely wanted out of school; *writing* words correctly is what is required in after life. The necessity for frequent *written* exercises to familiarise the eye with the *appearance* of words is thus brought forward once more.

II. **Dictation** is pre-eminently a *testing* exercise; it is a mistake to rely on dictation alone for teaching spelling.

Dictation should never be given unless the pupils can reasonably be expected to spell the words. If children are set to do what they are not sure of, they must *guess* or *copy*:—the one encourages carelessness, the other is a species of cheating.

If a child always makes numerous mistakes in his dictation, he comes to look on this as a recognised and trivial matter. *This is exactly the contrary to the feeling which should be cultivated.* The pupil also has actually *something to unlearn,* after he has written a word incorrectly. The correct principle to act upon is to *give no excuse for making mistakes.* If errors are made after this, they should not be passed over lightly.

Mistakes must be carefully corrected.

The teacher should *keep a list of words in which errors have been made.* These serve for lessons in oral spelling and for dictation. Good results will follow from their thoughtful use.

Repeat the Dictation lesson after an interval of a few days. The writer would recommend the adoption of this device whenever the spelling is bad throughout the class. He has sometimes caused the same extract to be repeated day after day until every boy in the section could write it without mistake, and he is convinced of the wisdom of such a plan, when carelessness prevails extensively. *Boys ought to feel that what you require of them is reasonable and fair.* After previous and recent instruction they ought to be able to show that they have assimilated it. *See under Transcription.*

Interesting dictation lessons may be made up by the teacher. Choose a number of words bearing on a subject such as "parts of the body," "the breakfast table," "the garden," "the house," &c. Teach these in spelling lessons, and recapitulate by dictating sentences so constructed as to contain these words.

Directions for a Pupil Teacher who is about to give a Dictation Lesson.

1. Give the children an opportunity of learning the words that are to be dictated. Let them have their reading books for five or ten minutes before or after their reading lesson, and study the words on part of a page, or on one or two pages, according to the ability of the class. Or perhaps this may be done at home.

3. Choose a number of words from the portion which has been prepared, and also a short extract from the same piece. The extract is intended to give practice with short and common words.

4. Read the extract through, deliberately and distinctly. Dictate it once a few words at a time, and from stop to stop in the upper classes. Unless the stop be other than a "comma," the teacher may thus save himself the trouble of saying what the stop is. Dictate the words *once* also; cultivate careful attention; give time to write reasonably well; and avoid repetition in the exercise.

5. Look sharply out to prevent copying. If you detect a child in this practice, stop his writing at once.

6. Allow no rubbing out or altering.

7. *Examine the work, and be careful not to pass any mistakes.* If the children have been writing on their slates, have the writing turned down to the desk before you begin to examine. Then cause the boys in the first desk to show their slates. Draw your pencil *through* the mistake, and mark the number of errors by a figure, "2," &c. After one desk has been passed, have their slates turned down, and proceed to the next, and so on, through the class. If books are used, try not to disfigure them.

8. Cause the children to write out each word that has been wrongly spelt, twice in their books, and about six times on their slates.

9. Write out the important words in which mistakes have been made on the black-board, and enter them in a book to serve for future dictation exercises.

10. Look at the work after the mistakes have been corrected. A general glance at the books of the class and a careful inspection of one or two in a desk, will generally be all that time will now allow you to do.

To correct the mistakes of a large class.

1. At the word of command, the boy at one end of the seat stands, and takes up his own exercise, *and that of the boy next him.*

2. At each of the words "one," "two," every boy passes the book before him "one place," towards that end of the desk where the boy is standing. This boy at the same time passes quickly but quietly *in front* of his desk, and carries the *two* exercises to the boys at the other end, and then returns to his place.

By this plan, the temptation to look upon the next book, instead of that which has been given to the scholar, is minimised. Little or no extra time is occupied in the changing, whether the books be passed over *two* places as here recommended, or only *one* as is usually done. Or, book and slates may be exchanged by children seated in parallel desks. by

causing those in the first and third desks to stand, take their books, face right-about, exchange with the children then facing them; then front, and sit.

3. The teacher goes through the exercise, standing in front of the class, and spelling distinctly and in order, all the words in which mistakes are likely to have been made. His previous knowledge of the lesson should allow him to supervise the boys carefully as they correct one another's exercises.

4. After this is over, the same boy may fetch the books, and the other exercises can be returned to their owners at the word of command.

5. Endeavour to see every boy's book after he has made the needful corrections, and look sharply after those pupils who from previous experience you know are likely to require it.

This final examination ought to be as complete as possible. The whole plan can never be so effective as the teacher's own personal examination, and is likely to provoke slovenliness, or even cheating, unless there be a wholesome dread of detection and of its consequences. Let the teacher therefore look on this final revision with the importance it deserves.

Word-building. Spelling-lessons in their modern form ought rather to be termed "word-building" lessons.

The Revised Instructions to H.M. Inspectors emphatically condemn, in paragraph 23, the practice of attempting to teach spelling by oral and simultaneous repetition, and point to word-building and grouping as the only truly scientific methods, and to transcription and writing from books as the best means of overcoming the difficulties which arise from our anomalous orthography. The rational and pleasant method of dealing with this difficult subject is now growing rapidly, and word-building lessons are frequently introduced into the Infants' School, and continued in the upper standards.

At first apparatus is employed as an aid to the teacher. Several forms of word-building frames have been invented, such as a device by which letters may be caused to appear and disappear as a roller is turned. In the hands of a bright and intelligent teacher this is of great use, as the children are readily interested, and the process of actually building up the words impresses them on their minds. A more direct method is to form words by arranging small cards, each with a letter printed in bold block type upon it, on the ledge of the black-board, or any similar support. This may be further developed by providing the individual members of the class with sets of such letters, and training them to form words by laying their letters in proper order on the desks. Several of the kindergarten occupations

yield similar exercises, and a pleasant word-building game may occasionally vary the school routine. For this boldly-lettered cards are provided, and hung around the necks of individual children. The teacher calls out an easy word as *cat*, the children so lettered, *i.e.*, *c*, *a*, and *t*, form a line before the class. The word is spelled and placed on the board. *Rat* is next given, and a rapid change takes place. The changes may be rung so far as the letters permit, but it should be borne in mind that this is more of an amusement than a real lesson, and that it loses its value as a novelty if too frequently introduced.

The following stages indicate broadly the scheme which is usually adopted for the different classes in this subject. Few examples of words can be given, teachers will find an ample supply on reading cards, in reading books, or they may with advantage consult some of the spelling books now issued based on these principles.

Stage I. The lessons are purely conversational. A vowel is presented by being written or printed on the black-board, and taught. The teacher proceeds by reference to some recent lesson, or to some game just played, an easy word of three letters in which this vowel is central; for example, letter A; with a ball they use a BAT, in most of their houses they have a CAT, it is often FAT, and fond of lying on a MAT, they give it a PAT, it would chase a RAT, &c. The vowels may be treated in succession, not forgetting different sounds of the same vowel. Words are easily found by prefixing the letters of the alphabet in turn, rejecting unsuitable forms. Bright talking must be indulged in, and as many words as possible used with the same syllable. The important point to keep in view is the *form* of the word; the sound they will probably already know. This is a factor to be carefully remembered in all the stages, for in dictation and composition exercises the difficulty does not lie so much in a want of knowledge of the necessary words so far as sound goes, as in an inability to reproduce correct forms. It is somewhat analagous to the difference between knowing a friend when we meet him, and endeavouring to reproduce his features as a memory-drawing. The most accurate observation must precede such a feat.

Stage II. This group should proceed to further exercises in short words with altered initials. They should use them in sentences of their own, transcribe such sentences, and afterwards reproduce them as dictation exercises. The words need not be built to a special vowel, but rather to a particular ending, thus *ack* admits of such forms as *b-ack*, *h-ack*, *j-ack*, *l-ack*, *sm-ack*, *cr-ack*, &c. Much ingenuity may be displayed by the teacher, and, if the instruction be good, will be displayed by the children in the formation of the required sentences. Here, as in all the following stages, good sense should be aimed at. The teacher will do well to carefully

prepare suitable sentences involving the words used, before commencing the lesson, that he may not be obliged to fall back upon trivial and childish ones. All transcription and dictation exercises must be most rigidly marked and re-written until correctness is secured. Transcription is the most important feature of this method, any excess of dictation will destroy the good of the lessons by familiarising the children with incorrect forms, which persist in their memories to the exclusion or confusion of the correct ones.

Stage III. Some endeavour may now be made to deal with the simpler rules which regulate the addition of suffixes ; such as (1) the doubling of the final consonant in cases where the root form ends in a consonant preceded by a vowel, and the reverse of this where the two final letters are consonants ; (2) rules regulating the retention or elision of final "e ;" (3) rules relative to plural forms. These should be taught inductively by taking simple and familiar words and deducing the rule. They should be impressed by the transcription of numerous examples, and tested by dictation. Further word-building exercises should be given with more difficult forms than in the previous stage, involving some anomalies of pronunciation, as those built upon the syllables *awl, ause, aught, ought, ould, eight, eign*, &c. Furthermore, the children may now be taught to distinguish between "is" and "his," and, in their simpler usages, "as" and "has ;" sentences being given and required involving one or both of the words in each couple, and transcription and dictation extensively used, the latter as a test only after much of the former.

Stage IV. The knowledge previously acquired will now enable the teacher to proceed with the classification of words according to their vowel sounds. Rules previously given will need to be frequently revised, and the same triple scheme of work should be adopted, *i.e.*, (1) sentences including special words, given by teacher and class ; (2) transcription of same ; (3) dictation of same or similar sentences as test. Further progress may be made with the commoner words of like sound, but different spelling :—"their" and "there," "where" and "were." The only rational plan of teaching them is that previously recommended, though it may be some help to point out that "there" and "where," which usually indicate place more or less definitely, are built from the root "here," which is a pure adverb of place. A list of short words containing silent letters, such as *knee, whole, wrap, sign*, &c., should also be frequently worked through.

Stage V. In this stage the children are in a position to deal fully with the common spelling rules, such as doubling or not doubling the final consonant, omission or retention of final "e," change of "y" into "i," change of "ll" to "l" when suffixes are added ; with words of more than

one syllable. Unfortunately there are exceptions, and though many of these admit of explanation, still a residue will need special attention. Repeated transcription of these anomalous forms is the only possible treatment. The children must be thoroughly familiarised with their form. The commoner homonymous forms previously dealt with should now be supplemented by a fairly exhaustive list of such sets as *die, dye; fair, fir, fur; air, hare, heir; peace, piece; wait, weight; pair, pare, pear,* &c., and a collection of difficult miscellaneous words of irregular spelling, should form the subject of frequent lessons. Such words as *separate, business, necessary, occasion, pursue, permit, woollen,* together with the various "ei" and "ie" words, need repeated transcription until mistakes are impossible.

Final Stages. Work will still proceed upon the same lines:—

1. Spelling rules, with special attention to exceptions.

2. Words of some length and difficulty sounded almost or quite alike, the place of the word in the sentence being frequently the only guide to its spelling; for example, *council, counsel; principle, principal; practice, practise; prophesy, prophecy.*

3. More elaborate exercises in word-building, involving the formation of all possible forms from the root, as:—

audible	*social*	*inquiry*
audibleness	*sociality*	*inquisition*
audibly	*sociable*	*inquisitive*
audience	*sociably*	*inquisitor*
audit	*sociability*	*inquisitorial*
auditor	*socialism*	
auditory	*society*	

4. Miscellaneous words of exceptional irregularity, such as, *yacht, colonel, mayor, cheque, quay, corps, aisle, psalm.* Great demands are made upon the writing lessons of upper classes, and, as a result, formal spelling lessons are frequently altogether discarded during this stage of school life. This is not a good plan; room should certainly be found for one lesson each week, and if carefully prepared, it can be made both useful and interesting. The pupils usually appreciate and enjoy it, as the word-building and sentence-making yield pleasant mental exercise, and the lessons, from their infrequent occurrence, have all the charm of novelty.

Education Department Instructions. The following circular, which has been issued by the Education Department to H.M. Inspectors, contains much useful matter.

"Word-building is a system of teaching by means of a course of progressive lessons, leading up from the formation of simple sounds to the composition of words by means of affixes and suffixes, and may be considered to consist of two distinct divisions :—

"1. The building up of a single syllable, by assigning to it that combination of letters which usage has determined to be the conventional representation of its sound, which is the true inductive method of teaching spelling.

"2. The combination of one or more of such syllables, of which a root word, *i.e.*, a word which cannot be reduced to a simpler form, is composed, with suffixes and affixes, such as the formation of nouns from adjectives, as *heavy*, *heaviness*; thus giving a training in the use of language.

"The former process by itself would lead to correct spelling in the languages of countries which possess comparatively few cases of exceptional spelling. But the imperfections and inconsistencies of our English alphabet in representing many of the commonest sounds are so numerous that it might almost be said that in English we virtually possess two separate languages, a spoken language and a written language, the one appealing to the ear, the other to the eye.

"It is not possible consequently to separate the spelling of anomalous words entirely from word-building, because a purely phonetic method of spelling English words cannot be used; therefore, after dealing with a group of words connected by a common spelling of the same sound, and so reducing a considerable number of English words to certain visible and intelligible principles, the teaching should embrace the spelling of some few exceptional words of common use, which convey the same sound by a different combination of letters, though such instruction lies quite outside the progressive course of lessons on word-building. It should be clearly understood that such lessons are subordinate to the word-building, and should not be considered as a real test of a good series of word-building lessons. In selecting the exceptions to be taught it would be wise to select such anomalous words as are in common use.

"A clear distinction may be helpfully drawn between the methods of teaching groups of regular words formed by word-building and exceptions to the rules. In teaching, the former should be spoken before they are written on the black-board, to connect more firmly the sound with its ordinary combination of letters; the latter should be written on the black-board before they are spoken, so that the teacher may be able to disconnect the same combination from its ordinary pronunciation.

"The word-building lessons in infant schools may be usefully restricted to the simple phonic teaching of the more common of the different sounds

represented by the letters of the alphabet. It should be possible in infant schools to teach simple combinations which might include, for example, all the simpler closed syllables; while relegating to the schools for older scholars such difficult varieties of sound as are conveyed, for instance, by three sounds of the combination 'ch' in chin, charade, and chasm. But the chief part of the word-building will, in the upper schools, consist of the combination of root words with suffixes and affixes, which might be progressive in difficulty, rising from such simple forms as the more common termination of nouns and adjectives and the suffixes denoting gender, to the formation of adverbs from adjectives or prepositions, or other difficult combinations. There is no better exercise of the inductive method of reasoning, nor one more intelligible and interesting to young children, than verbal analysis, *i.e.*, the exact investigation of the several parts of familiar words. The addition, for example, of the suffixes *en*, *er*, *est*, *ly*, *ish*, and *ness*, to the word sweet, and the use of words so found in short sentences, will lead the scholars by simple induction from these and other similar words to determine for themselves the exact meaning of each suffix.

"Any course of word-building proposed should be approved if it follows the following rules :—

> "1. The classes of words proposed to be taught should be plainly set out in progressive order, *i.e.*, words that can be taught both through the eye and the ear.
>
> "2. The anomalous words, or words which form exceptions to these rules, which can be taught by the eye only, should be also set out in lists, and limited to words in common use.

"Some freedom may be permitted as regards different modes of spelling the same word, as inflexion and inflection, bylaw and byelaw, judgment and judgement."

WRITING.

Importance of the subject. 1. The ability to *express our thoughts in writing* is allowed by all to be a desirable attainment. If we are to do this with ease and readiness, we must previously attend, among other things, to the mechanical process of writing.

2. If *others* are to read what we have written, our writing should be legible.

3. In *business* and *commercial life*, free legible handwriting is indispensable.

4. The writing of the scholars has probably more *influence in determining the reputation of a school* than any other subject that we teach.

Almost every parent notices his son's writing, even if he sees nothing else, and it is easy for him to judge whether improvement is being made or not. So that the consideration in which a school is held by the outside public, depends very largely upon the amount of attention which is paid to this subject.

5. The *actual character of the school* may be generally estimated with fair correctness after an inspection of the copy-books.

If the books be neat and clean, and there be a *general fidelity to an appointed standard*, we may be sure that the teacher pays attention to the writing. And it will be reasonable to infer that he who bestows the needful care on detail in one subject, will not be careless in the other subjects of school-work. Visitors, official or otherwise, base their estimate of the school to a considerable extent upon the appearance presented by the various manuscript exercise books.

6. It is a means of *cultivating observation*, *control of hand*, and *neatness*. Habits and acquirements of this kind are of general use.

Writing is an Art. We become expert by practice. What

is wanted is (1) *Something to aim at*, (2) *Successive tentative efforts* to reach the aim.

The natural gifts which are needed are (1) an eye for form, delicate visual perceptive power, (2) a sensitive hand, "muscular sensibility."

These gifts are not equally bestowed upon all, but every one has them to some extent, and like all other mental and bodily powers, *they may be developed by practice.* Very little exalted mental power is required. We find among our pupils, that good writers are occasionally dull in other parts of school-work.

Marks of Good Writing. Good writing is characterized by *Freedom* and *Rapidity* in its production, and by *Legibility* and *Beauty* in its result. All these depend to a large extent upon *Simplicity of Form.*

We should aim first at legibility. This is affected by the *shape* of the letters, their *size*, and their *spacing*.

Letters should be rounded rather than pointed, should be fairly large, and should be placed at a considerable but uniform distance asunder, especially in current hand.

Uniformity is not always an aid to legibility. An "elegant" handwriting is sometimes very difficult to read. But with proper management, uniformity is a great help to legibility and beauty.

The *beauty* of the writing as a whole will depend upon its character in detail.

Freedom and rapidity are developed by practice. The mode of holding the pen, and the shapes of the characters, and the mode in which they are joined, will be important in this connection.

Teaching Writing consists in securing proper attention to details. The writer's plan was to regard script characters as made up of "*strokes*," "*turns*," and "*junctions*," and to concentrate the attention on these. An abundant use of the *black-board* and *lead-pencil* was relied on to make things clear.

1. **Strokes** should be uniform in slope, height and thickness; up-strokes fine ("lift" the pen over them); down-strokes firm, even, and smooth-edged.

2. **Turns** should be of uniform width and shape, oval in form, based on the broad ellipse rather than the circle. *N.B.*—In joining *n* to *m*,

ory, &c.; the spacing seems too wide, if the turns are made of the ordinary size; Mulhaüser therefore makes them narrower in these cases.

3. **Junctions** should be uniform, and at a recognized height.

Lessons should be given in which these points are dwelt upon in detail.

Thus, *i* should not be taught as a whole letter, so much as (1) a *down-stroke*, (2) a *turn*, and (3) an *up-stroke*, in forming each of which certain conditions have to be satisfied. The *whole character* should appear on the black-board, but the teacher should *analyse* it before the class, cause the pupils to observe the *parts* and their connection, and set them to *produce them one by one*. He should let them know where to commence the first *stroke*, the direction it should take, its slope, thickness, and length, the shape and size of the *turn*, the direction and length of the *up-stroke*, and the position, size, and shape of the dot. The teacher, in fact, causes his pupils to know *what to do*, and *how to do it*, down to the minutest needful points; it then remains for him to *see it done*.

Broad conditions of good teaching in this subject. The method advocated in this chapter need not be followed exactly; some teachers would form letters on a different principle, and would therefore go to work in a different way. But whenever writing is well taught, the teacher must **have a plan**; must settle what he wants, and how he means to teach; and must *insist* on having his ideas and directions carried out, after he has made them clear; he must **have his plan adhered to.**

Plans should be as detailed as is practicable. Judgment must be exercised as to the amount of detail that it is advisable to introduce. *Analysis should never be carried beyond the capacity of the pupil.* In a younger class, it should "not descend to the smallest parts possible, but to the smallest parts which the pupils can appreciate." (*Currie.*) But after a well-considered scheme has been drawn up, *let actual "instruction" in writing be given* in accordance with it.

The success that follows any efforts will depend upon the teacher's *force of character*. If he form a settled purpose, and set about achieving it quietly and resolutely, he will in time gain his end.

Faults in Writing. Nothing does more in class-teaching than careful correction of faults. *Use mistakes to exemplify and enforce what is correct.*

As a rule, whenever you discover any wrong in a pupil's writing, which you feel others are likely to make, stop the writing, *go to the black-board*, make the letters so as to *exhibit the fault* clearly (exaggerating it if necessary), *get the children to see what is wrong, and how to put it right*, then set them to work again.

Some of the commonest faults are :—

I. **Strokes.** (*a*) *Wrong slope*, either too great, or too little, or, more commonly, not uniform. Call attention to this, and use black-board and lead-pencil to correct it.

(*b*) *Not straight.* Both up and down strokes should be taught as "straight." After the teacher finds that his pupils can make straight strokes, he may point out to them that the up-stroke is frequently slightly curved, but that the curvature is so slight as scarcely to affect the straightness of the stroke. Down-strokes, whether short or long, should always be as straight as though they were ruled, except in curved letters. Attend carefully to *f* and *h*.

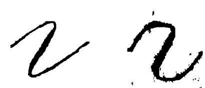
In making *e*, for example, draw a perfectly straight and even stroke for three-fourths of the whole height, then continue the stroke a little lower, and gradually ease it off into the turn.

(*c*) *Ragged edges* arise from holding the pen so that the points are pressed on unequally. They commonly result from resting *the side* of the hand on the desk instead of the *flat* part of the wrist or arm, and sometimes from holding the pen itself on one side.

(*d*) *Unequal thickness* in corresponding strokes or in different parts of the same stroke. It is common to find strokes thickest near the top, or near the bottom, or near the middle. To procure a firm uniform down stroke, rest the pen for an instant at the top of the letter, and maintain the same pressure to the end of the stroke, where the pen should again rest. By this means each end of the down-stroke will be "squared."

Note :—Faulty strokes are often traceable to timidity ; write *carefully*, but *boldy*.

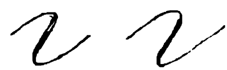
II. **Turns.** (*a*) "*Too sharp*," or "*too round*" (approaching a square model). Attention to the straightness of the strokes is the best practical remedy for this evil. The writer has long been accustomed to give the following rule, although he knows it is somewhat paradoxical :—"*Let your strokes be straight, and your turns round.*" This, with a free use of the black-board and lead-pencil, is almost sufficient to secure a good style of elliptic turn.

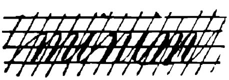


(*b*) "*Too large*," "*too wide*." This fault often originates in the wrong slope of the strokes. Use the black-board and lead pencil to call the pupil's attention to the fault and to remedy it.

(*c*) *Thick turns* are commonly produced by holding the pen too tight, or from bending the stroke before coming to the actual turn, or more frequently from wrong slope of the pen. They are sure to be formed, if the hand rest upon its side, and the pen be held at right angles to it, a style which some young people affect.

(*d*) *Unequal size*, the turn at the top being smaller than that at the bottom, or *vice versa*. This also is a very common fault. One of its consequences is irregularity in the distances between the letters. Call the attention of the pupil to the fault; set him to write the letters "*mu*," or the word "*minim*" from your copy, and after he has done it, let him turn his book bottom upwards to see if "*mu*," or "*uininu*" are properly shaped.





III. **Junctions** *wrongly placed*. On this matter teachers differ considerably. We must bear in mind that our "set hand" ought to be an introduction to the ordinary "business hand" or to "running hand." Our aim is to give the power of forming well-shaped letters, and the ability to combine them readily. The writer's plan has been to have letters joined in the *middle* in all hands except small hand, and at the *top and bottom* in small hand. [By "middle," "top," and "bottom" is meant those points in the letters *n* or *u*.] The first regulation is intended to aid in forming large shapely letters, the second is the introduction to writing "without removing the pen." *There should be a rule on this matter*, and teachers ought to insist on its being obeyed.

So much depends on the ability to detect faults at a glance, and to correct them at once, that pupil teachers are recommended to make a *classification of common faults* for themselves. The following table has done good service.

Faults.	Illustrations of Faults.	Causes.	Mode of Correction.	Correct Form.
I. **Strokes.** (*a*) Not straight (*b*) Not parallel (*c*) Ragged (*d*) &c. (*e*) &c.				
II. **Turns.** (*a*) (*b*) &c., &c.				
III. **Junctions.** (*a*) (*b*) &c., &c.				
IV. **Letter or Word as a whole.** (*a*) (*b*) &c., &c.				

Locke on Teaching Writing. The following quotation is from his work. "*Some Thoughts concerning Education,*" published in 1690.

> "When [a boy] can read English well, it will be seasonable to enter him in Writing. And here the first Thing to be taught him is to hold his Pen right; and this he should be perfect in, before he should be suffered to put it to Paper: for not only Children, but any Body else, that would do any Thing well, should never be put upon too much of it at once, or be set to perfect themselves in two Parts of an Action at the same Time, if they can possibly be separated." * * * "When he has learned to hold his Pen right, in the next Place he should learn how to lay his paper, and place his Arm and Body to it. These Practices being got over, the Way to teach him to write without much Trouble, is to get a Plate graved

with the Characters of such a Hand as you like best: but you must remember to have them a pretty deal bigger than he should ordinarily write; for every one comes by Degrees to write a less Hand than he at first was taught, but never a bigger. Such a Plate being graved, let several Sheets of good writing Paper be printed off with red Ink, which he has nothing to do but go over with a good Pen filled with black Ink, which will quickly bring his Hand to the Formation of those Characters, being at first showed where to begin, and how to form every Letter. And when he can do that well, he must then exercise on fair Paper, and so may easily be brought to write the Hand you desire."

NOTE.—From this we learn that Locke's method was essentially *tracing*. Almost all compilers of copy-books employ this method to a greater or less extent, at least in the early stages.

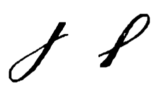
Let teachers also note the attention to detail which Locke recommends, and his wise advice to attend to one thing at a time. Notice also his remark that one's handwriting is likely to become smaller, and hence see the importance of paying attention to the size of the writing of our pupils.

Mulhauser's Method. This method consists of three parts: 1. *Analysis*; 2. *Classification*; 3. *Synthesis*. The first two are the duty of the teacher; the last is the work of the pupil under close supervision.

1. *Analysis* of script characters into their elements. Mulhauser determines that there are "four elementary parts of letters." "By means of these four principal elements slightly modified, are formed the twenty-six letters of the alphabet." These "elementary parts" are :—

I. "The Right Line." 

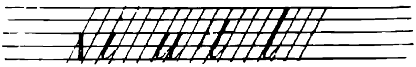
II. "The Curve Line." 

III. "The Loop." 

IV. "The Crotchet." 

2. *Classification*. The letters are next classified "in the natural order

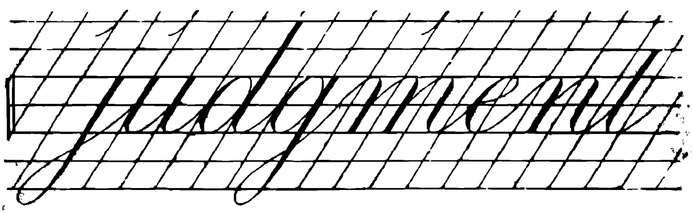
of their simplicity;" those which consist of the same elements repeated or only slightly modified being grouped together. *e.g.*,—



3. *Synthesis.* After the elements have been separately taught, "the pupil is then led to combine the elements which the previous analysis had decomposed; and by this process of construction or *synthesis*, his mental powers are exercised and prepared for the more difficult labours of *analysis*; his attention is actively engaged; he thoroughly understands, for he has himself, as it were, formed the object which he studies; it satisfies, and becomes almost a part of his intelligence." (The extensive quotations here introduced, are taken from the *Manual* published by the authority of the Committee of Council on Education in 1854.)

Mulhauser's *copy-books were ruled in rhomboids*, which enabled the pupil to determine the height of the letters, the slope and length of the strokes, the width of the turns ("hooks" or "links"), and the place of the junctions.

He made use of various *technical names* for the parts of letters, and after he had taught these parts in separate lessons, he employed *Dictation* very largely, in getting the letters built up from their parts. For example, the word



would be dictated thus:

Right line two heights (down), Loop, Half-link (j)
Right line, Link,—Right line, Link (u)
Double-curve,—Right line two heights, Link (d)
Double-curve, Right line two heights (down), Loop, Half link (g)
Hook, Right line, Hook, Right line, Hook, Right line, Link (m)
Loop, Curve, Link (e)
Hook, Right line,—Hook, Right line, Link (n)
Right line, one height and a half, Link, Bar (t)

"The teacher does not dictate a letter which can leave the pupil in

doubt as to the precise thing that is required of him, but pronounces in succession each element of the letter, which the writer follows, without thinking of the letter itself. These enigmas both amuse the children and accustom them to reflect. This part of the system calls into action the intelligence of the children by an allurement resembling that of a game."—*Manual.*

Note the full and careful attention to details which Mulhaüser enjoins, and the very thorough teaching and supervision that are needed in order to secure the highest type of result.

If the teacher has fully done his work in the preliminary stages, every pupil will know exactly (1) "**What** *to do*," and (2) "**How** *to do it.*" But this is not all that is needed: the teacher ought to (3) "**See** *it done*," and this, as has been stated before, depends upon his energetic supervision.

A modification of Mulhaüser's method is, in the writer's opinion, the best means of teaching writing.

Modern Handwriting in this country is usually based upon the style demanded by the Civil Service Commissioners.

Vere Foster's System. On these lines a deservedly popular scheme has been formulated by Mr. Vere Foster. The main points of his system are:—(1) Any word consisting of any combination of letters may be written without the pen being raised from the paper. To this end some modifications of the letters based upon "o" and "a" forms are introduced, and the letter "x" has a peculiar but perfectly legible outline. (2) The up strokes slope more than the down strokes. This accords with the natural inclination of the hand when making these varieties of stroke. (3) The general slope of the letters is slight, thereby any tendency to degenerate into back hand is obviated. (4) The up and down strokes are of almost equal thickness. It is essential to the proper teaching of this, as indeed of any other style of handwriting, that the teachers themselves should adopt and thoroughly master it. An argument for the introduction of copy-books into large schools where several adult teachers are employed may be based upon the necessity for uniformity from the lowest to the highest class.

The Upright System. The system of perfectly upright handwriting is now making considerable progress. There is something to be said for and against its use. It is a practical protest against the degeneration of a slight into a great slope, and also against an excessive use of flourishes. In its favour the argument is used that it necessitates a position which is thoroughly hygienic, both with regard to the body, and arms, and the eyes. Any tendency to spinal curvature is prevented by the perfectly upright

attitude which is maintained, and, as the writing is constantly within the circle of perfect vision, both eyes are equally used, and there is no undue strain upon either of them. One of its most vigorous exponents argues that it admits of left hand writing equally with the right.

Any teacher will do well to investigate the claims of the conflicting styles before finally deciding which to adopt. It must, however, never be forgotten that by no method can the trouble, patience, and skill necessary to the proper teaching of the art be dispensed with. A faulty style well taught is decidedly preferable to the most perfect ideal, to attain to which the pupils are almost left to their own devices.

Mechanical Aids. These are a help to the learner in the early stages, but their use ought not to be continued too long. They should aid in developing the natural powers, but after a certain point is reached, these powers are best developed by being called into independent exercise. Mechanical aids, which in the early lessons are an aid to the pupil, may in the end become a source of weakness.

The use of *Mulhaüser's rhomboids* has been already noticed. The writer has for many years had the black-boards, and large slates which do duty as black-boards, ruled on one side with similar rhomboids, about four inches high. This renders it much easier for the teacher to set a copy or to call attention to faults. This plan has been productive of much good. *Ruled lines* on slates and in copy-books should be used, and the writer thinks it will be desirable to maintain them in use to some extent quite through the school course. Their use will be less frequent as we ascend the school. It is a good plan to have the slates ruled *on one side* only. The teacher can then employ a plain or a ruled surface at his discretion.

Tracing. Almost all series of copy-books wisely employ this aid at first. Those in which the help to the pupil is gradually withdrawn are best from this point of view. Let the teacher be careful to see that the children really strive to go over the lines for tracing, otherwise the aid is productive of more harm than good.

Teacher's own lead-pencil copy for tracing. This is the very best form of book-copy, provided of course that the teacher can write well. Boys are incited to strive if they see the copy actually produced, and the lines of the lead-pencil copy do not awe them like the printed "copper plate." The teacher can also mark over any letter which is badly shaped. A good lead-pencil is more easily manipulated, and makes less unsightly strokes than a pen.

Suggestive Plans of Writing Lessons for various classes.

I. To children who are learning to write single letters.

Preliminaries. The teacher should go through the alphabet and arrange the letters in groups, according to the elements entering into their construction; such as *i, u, t, l, b; n, m, p, h; o, a, d, q; c, e,* &c.

His black-board and accessories should be ready, and it will generally be well to have a simple copy written before the lesson begins.

Assuming that the children write on *slates*, these should be carefully *ruled* and cleaned; *pencils* should be fairly *sharp*, and of *proper length.*

Lesson proper. (1) *Deal with the copy so that children may really see it;* take one letter at a time; show its *details* one by one, and let children see how the whole is made up. Direct attention to shape, size, &c., of *strokes, turns,* and *junctions.*

(2) *Position* of slate, body, arms, hands, and pencil must be looked to. If the five positions given in Mulhauser's manual be taught, they can be assumed at the word of command; time might be saved, and order helped thus. With young children, the teacher must *tell and show* these things frequently; he must hold a pencil as a pattern for them, and require them to *imitate* him at his bidding; so also with other points.

(3) *Children's practice.* Learning to write is made up of careful *looking* and careful *doing. Try to give plenty of practice.* Set the children to imitate the copy you have written and explained; pass round the class to supervise, and give aid where it is needed. Use a lead-pencil as a rule in paper work.

(4) *Faults, Children's mistakes.* The class should generally be stopped, and the fault be exhibited on the black-board, together with the correct form. As young children are unable to distinguish minute points, mistakes may be exaggerated to show them clearly. Use the black-board very freely.

(5) When one letter is well made, go on to another, and deal with it on the same plan. Words can be made up after a few letters have been taught; *e.g.*, (1) *till, tub, wilt;* (2) *nun, plum;* (3) *ant, potman;* (4) *dace;* &c.

N.B.—*Figures* should be taught singly, and with equal care and attention to detail.

II. A class which is beginning small-hand.

The character of the small-hand, will depend upon the thoroughness of the previous practice in large or medium-sized hand. Small-hand should be taught as "*Large-hand written small,*" but with certain new elements

and modes of junction. The same careful attention to *the details of strokes, turns*, and *junctions* must be given as in large-hand ; in fact, as the characters are smaller, and mistakes less liable to be discovered, the teacher ought to exercise greater vigilance at this stage.

(1) Having made all preliminary arrangements as in the former case, set a short word, such as "*m*" or "*mum*" as a copy upon the blackboard, calling attention continually to the three chief elements—strokes, turns, and especially junctions.

(2) The general plan of supervision and of correcting mistakes will be the same as before.

(3) The new elements, *looped letters*, and the conventional forms of the "*x*" (*x*) and "*t*" (*t*) in small-hand, should be made the subjects of special lessons.

(4) Insist upon letters being of fair size. The size should be the same throughout the class. Children are apt to write much too small unless they are checked. If the teacher be careless, small-hand will soon degenerate into "scribble." It is not necessary that a great deal should be written, but it is most necessary that *what is done should be well done.* Let the young teacher remember that the type of writing of the whole school is being formed in the lower classes.

III. A Lesson in Writing to an advanced class.—The utmost value ought to be set upon this exercise in this part of the school. The teacher's force of character, and his power as a teacher exhibit their results most prominently here. Pupils who have reached this stage will soon leave the school, and their handwriting for life will bear the marks of this finishing process.

1. In continuation of the previous exercises, lessons should be given upon *strokes, turns*, and *junctions*, as shown in words. The writer has found it quite as necessary to call attention to the *up stroke* and *turn* and *straight down stroke* in the first part of the letter *n* at this stage as in the early stages, and this, even when he has been teaching students in training colleges. The words will of course be carefully chosen, and may range from *minim*, through *coax* and *myrrh*, to *Egypt* and *zigzag*.

2. The teacher should call attention to faults which are likely to arise from adopting an improper posture, or from holding the pen wrongly. For example, he should show how "Heavy upstrokes" and "Want of freedom" may result *if the pen be held too tightly, or too close to the point*, and how "Ragged strokes" and "Curved lines" are likely to follow from *wrongly-sloped pen* or *improperly-placed hand.*

3. The black-board and lead-pencil should be as freely used as before.

4. Free "*Running-Hand*" may and should be taught also. All previous exercises should have the easy formation of this style for their object. The chief points which need care are (1) the characters should be of *fair size*, (2) corresponding letters should be of *uniform height*, (3) letters should be set at a *fair and uniform distance* apart. If the pen be then held lightly, and at a good distance from the nib, a free legible style may be formed.

(1) General Hints.

Facts in History, Geography, and Grammar, form good subjects for copies; they can be *written by the teachers*, and pasted on slips. *Printed headlines* in the copy-books save trouble, and are more perfect than the teacher's writing, from an artistic point. *Copies written* by the teacher *on the black-board* are the best for class-teaching; nothing also is more *helpful to the teacher* himself than practice at the black-board.

(2) Contrive to get **all the members of a class to write the same copy** at one time.

If copy-books with movable headlines are employed, this is feasible even if engraved copies are used. The pages of such books are cut across immediately below the headline, which thus forms a separate slip, which may be folded to the left, apart from the remainder of the page. A pupil absent on the occasion of any lesson, folds over the engraved headline which formed the copy on that day and is thus enabled to perform the same exercise as the other members of the class. Thus class-teaching is possible, and general errors may be corrected by the use of the black-board. The point to aim at is to secure such uniformity in the lesson as will enable class-teaching to be the chief method employed.

(3) Cause **children to use their eyes**, and to **think** *before* and *during* the writing, and not to put off looking and thinking until they have finished a letter or word. Eyes count for as much, if not more than hands, in writing.

To induce children to *look at their copy*, explain it in detail where you can, before they write. *Never allow much to be done without its being seen;* a line is usually enough. In examining, make it a rule to *point out some fault*, refer the boy to the copy, and have that particular fault set right.

The *shape of the copy-books* has an influence, when only one copy is printed on a page; oblong books are better than square, as they keep the

copy closer to the child's eye as he writes. Oblong books also are not so likely to project over the desk, and to be displaced by any one passing by.

Copy-slips can be brought down to the dry line next above where the child is writing. By this means the pupil is prevented from copying his own handwriting and often repeating the same error. Slips are, however, liable to be lost or to become soiled.

(4) **Take a high standard** yourself. Encourage *children* to take a high standard also.

The common-sense aim is to enable boys and girls to write well enough for the business of life. Yet no little of the satisfaction connected with writing in an advanced class, lies in "carrying the writing to the pitch of a work of art," in satisfying the æsthetic taste, and in producing writing like "copper-plate." Overmuch time and force may be expended thus, but of this there is seldom much danger. Remember too, that *the best way of getting children to write well is to urge them to aim at excellence*

(5) **Examine all writing books**, copy-books, dictation books, and home lesson books carefully.

Look at the work carefully *during* and *after* the lesson. A writing-lesson is almost, if not quite valueless, without proper supervision.

Head teachers should have some plan of knowing the exact condition of all the MS. books in the school. They should arrange to inspect them at fixed intervals, and in order that a right estimate may be formed of the progress of the scholars, every exercise should be dated at the time of its performance.

(6) **Use good materials.**

Encourage elder scholars to obtain copy-books of a superior kind, containing business forms, bills, invoices, &c.

Show regard for pupils' books; distribute, collect, and keep them carefully. Four inches is the minimum length for pencils. Insist upon all pupils using the same style of nib.

(7) **Large-hand copies have a special value**, as they are an aid to the muscular development of the fingers, hence their suitability for children in the early pages.

(8) **Never excuse carelessness** in writing.

Have everything well done. This applies to posture, placing the book, holding the pen, and also to slate work in writing and arithmetic.

(9) **The black-board and lead-pencil** can scarcely be used too much.

The *black-board for the class*, the *pencil for individuals* is the rule. Write neatly on the black-board, especially in junior and middle classes. It is well to have one side ruled *on Mulhaüser's plan. Mark over* any badly-shaped letter (after it is dry) with the lead-pencil.

(10) "**Clean neat copy-books** are often the sole index in the parents' eyes of the progress of the child."

(11) **Plenty of practice** is necessary to make skilful writers.

In the higher classes pupils may *copy interesting extracts* from books or newspapers with advantage. Under good supervision, this helps materially in forming a free bold style. *Business forms*, &c., can also be transcribed into an ordinary dictation book, as well as copied in the special book recommended under (6).

Composition and Letter-Writing. This branch of the important subject of writing is not usually introduced into the curriculum of ordinary schools until Standard V. is reached, though some preparation is frequently made in the lower standards by requiring the answers given in oral lessons to be in whole sentences. This practice is to be highly commended, but the results, when written work is attempted, are scarcely commensurate with the trouble involved. The New Code, in a note to Schedule I., allows the option of simple exercises in composition in the lower standards.

The scheme may be worked upon the lines of Course A, Grammar, as given on pages 36 and 37 of the same official publication. By this means such progress may be made in composition as to render the work of Standards V., VI., and VII., much more fruitful in finally producing what, after all, is the chief aim of the teaching in the central branch of the "three R's"—the ability to write a well-expressed letter. At the same time the lessons in Grammar will be rendered thoroughly practical.

If the above course be adopted the following stages may be taken in the standards preparatory to the fifth. The scheme of

English has suggested the general outline. Exercises are excluded by the exigencies of space; for these the teacher will do well to use some of the many books now issued which provide graduated lessons, preserving his independence at the same time by preparing his own when opportunity offers.

Stage I. Deal with very short and simple sentences derived from ordinary conversation with the class upon some interesting topic. Write a selected sentence on the board, and lead the children to see that it is composed of two parts: (1) The naming part; (2) The telling part.

Give several sentences; let them be transcribed and divided into these two parts. After one or two lessons of this nature, the meaning of the term "sentence" may be elicited, and the word used. Proceed to elaborate and vary the exercises by supplying subjects to be transcribed, and appropriate predicates added, and predicates to which subjects are to be placed. Nouns or pronouns may be used for the latter. Finally, towards the close of this standard course sentences, with objects, may be introduced; the proper forms of pronouns should be taught. Some familiarity should be obtained by practice in suitable exercises, with the various forms of the verb "to be." Other minor points may occur to the intelligent teacher, and are useful to give variety. Thus sentences may be written having the same word as subject and predicate alternately, thus:—"a walk is pleasant," "boys walk," "the children sleep," "sleep gives rest." It is to be understood that progress must inevitably be slow. The lessons are composite, sentences being made orally and then transcribed, with frequent but carefully graduated tests in which the pupil is required both to compose and write. All technical terms, with the exception of *sentence*, should be avoided, unless they are taught along with the English lessons.

Stage II. Adjectives may now be introduced and used—the term need not of necessity be employed. Simple sentences are taken, and words required which describe the subject. After some practice in the addition of such words to given subjects, the exercise may be varied by using the adjective as a part of the predicate, and also by throwing the sentence into the interrogative form; thus with the sentence, "It is a fine day," two other forms are possible, using the same adjective, viz.:—"The day is fine," "Is the day fine?" The words used may with advantage be those which form the base of concurrent word-building lessons. This remark applies throughout in the four stages. A lesson upon the elision of "e" when "y" is added will yield such adjectives as *juicy*, *noisy*, &c., which may be added to suitable nouns. Further practice may be given by requiring the children to tell the function of the words used in their

sentences. When some facility has been acquired in the addition of adjectives to the subject—the name-word of the sentence, adverbs may be introduced as added to the predicate—the telling word, to say *how, when, why, where.*

One particular kind is practised at a time, use being made of elliptical sentences, which are transcribed, and the blanks filled in with suitable adverbs. A supply of the latter may be obtained from word-building lessons given at the same time; thus a lesson on the change of "y" into "i" when "ly" is added, gives adverbs which tell *how* the action is done; *e.g.*, "heav*i*ly," "eas*i*ly," "merr*i*ly," &c. The use of the adjective and adverb with the verb "to be" should form the basis of several lessons; and here, again, further word-building lessons should be worked in to contrast adjectives and adverbs of like derivation.

Final lessons in this stage will teach :—

(1) The possibility of placing the adverb in different parts of the sentence, and more especially its insertion between the auxiliary and the principal verb.

(2) The use of the comma between adjectives added to the same noun.

(3) The use of capitals to certain name-words.

(4) The right use and the simpler ways of forming the comparative and superlative degrees of adjectives, with the involved word-building; and

(5) A *few* exercises in the correction of sentences in which errors have been purposely introduced in connection with the foregoing points.

It is to be understood that no technical terms are to be introduced or used unless the English course gives opportunity for their study.

Stage III. The transcription exercises given in this stage are the filling in of ellipses with suitable words chosen from the lists used in the word-building exercises. Such a list is written on the black-board in the course of oral word-building, the children transcribe it, and copy and complete elliptical sentences, using the vocabulary so formed. The earlier exercises should consist of verbs, nouns, adjectives, and adverbs, and many and varied exercises are involved by the possible terminations due to the inflexions of these various parts of speech. Furthermore, the blanks to be filled may be at the beginning, end, or in the middle of the sentences. When facility has been acquired in thus introducing words, phrases may be dealt with. These are best treated inductively; simple sentences containing prepositional extensions of the predicate being given and the phrase detected, and its meaning educed by oral questioning. The phrases will be seen to indicate the *how*, *when*, *where* of the predicate, and the pupils may be required to transcribe sentences from the black board, to underline the phrases, and to indicate, by one or other of the above words, the force of each. A further development of the exercise will

consist in requiring them to complete elliptical sentences by adding special phrases. Word-building lessons should intervene between these composition exercises in order that a suitable supply of words may be at hand. The two varieties of lesson must run concurrently, the words given in the one being used in the other. Extensions of the predicate being known, enlargements of the subject or object will form a series of lessons to be treated in a similar manner, *i.e.*, (1) Educed from oral examples ; (2) The meaning clearly seen ; (3) Exercises given to underline such phrases and indicate their meaning ; (4) Elliptical sentences given to be completed ; (5) The converse of the above; full sentences being set with phrase enlargements of the subject to be replaced by single words.

Stage IV. In this stage we may proceed to the consideration of sentences containing phrases as subjects. The progressive exercises advised in the previous stage will still be possible. When the subject is well known the object (or completion of the predicate) should receive similar attention.

It may here be repeated that the teaching will vary in accordance with the occurrence or absence of grammar as a class subject.

From the consideration of the above variations of the parts of a simple sentence the class may proceed to use the commoner conjunctions, "and," "but," "or." Exercises, introduced by oral examples, should be given in the linking of suitable simple sentences by the use of these words, to the possible elision of the subject of one of the given sentences, and when these are understood the couples, "either" and "or," "neither" and "nor," will furnish further exercises.

Simple examples of adverbial and adjectival sentences, taught on the same lines as previously indicated, will form the next step. Numerous examples of cases where a phrase may be turned into a sentence, or a sentence into a phrase, and also of the combination of two simple principal sentences into a complex one (by one of the principal sentences becoming a subordinate adjectival or adverbial clause in the complex form of the other), must be worked through. Considerable ingenuity is necessary in the construction of these sentences, and no efforts should be spared to provide sensible and interesting examples.

Word-building lessons involving more difficult words than those of previous standards should be continued, and the use of the "comma" should now be fully mastered.

Final exercises in this stage will treat of noun sentences used as objects, and, in connection with these, the proper placing of quotation marks, and the value and form of notes of interrogation and exclamation will necessarily be taught. The exercises admit of variety. The pupil may be required to underline in given sentences the words forming the noun sentence, to supply noun sentences in elliptical ones, and to introduce into

sentences void of them the due quotation marks and other stops and capitals. A further exercise is furnished by presenting sentences in the oblique narrative form, and requiring their transposition into the direct, with the converse.

In the last two stages some attempt may well be made to introduce original composition. Very little can be expected, but still a step or two along the road is not to be despised. The pupils may be asked to write about a recent lesson. Thus after an elementary science lesson on camphor, they may be asked to write "six sentences about camphor." The teacher will content himself with simple detached sentences at first, isolated by full stops, but after a time these should be linked into a connected form. Similarly less and less aid should be given by means of the question; the class may simply be told to write all they can about ice and so on. Somewhat similar exercises are possible in connection with lessons in geography and history.

Stage V. The writing requirements of the fifth standard admit of no alternative. The code prescribes the reproduction of a short story read to the pupils, and it is difficult to imagine any form of exercise which could, with advantage, be substituted for this obligatory one.

The pupils are supplied with matter, which they are required to re-write in their own language, with due attention to correct expression, the right construction of sentences, punctuation, and spelling, together with the intelligent reproduction of the story.

If the preceding course has been taken in the lower standards, the actual composition of a story may be at once proceeded with, if not, some preliminary exercises will be needed. These should be given until the pupils can correctly re-cast a sentence, and are familiar with its main and essential parts. In fact, the work indicated in the foregoing stages should be taken in as full a manner as possible, though, as short and "*simple*" sentences are first to be dealt with, instruction in "*complex*" ones may be deferred until necessary. Quotations are not introduced until considerable progress has been made, and the various rules relative to them need not be considered until an ordinary story can be fairly re-written. The early lessons will be based upon such plan as the following:—

(1) A very easy story is read twice to the class, care being taken that it contains an obvious point; to give variety it may occasionally be *told*.

(2) The story is reproduced orally by the class, being educed by means of suitable questions; and written on the black-board by the teacher.

(3) It is transcribed by the pupils, and finally after an interval of a day or two written by them, unaided.

Careful graduation of the stories, with less and less oral work and transcription will give the pupils the requisite power of composition as time progresses. Stories involving quotations, and those containing "*points*" which require considerable ingenuity to bring out, will form the final exercises in this standard. Care should be taken that any words unfamiliar in spelling or meaning are explained before the pupils begin to write. Short sentences should be firmly insisted upon at first, accompanied by the plentiful use of full-stops.

The greatest difficulty in this exercise is to be found in the necessary marking. The scholastic axiom—"that work unmarked, or marked in a careless or inefficient manner, is distinctly uneducational in its results," applies with double force to composition. It must be stringently corrected, errors explained, and if numerous, the whole re-written by the defaulter. This marking is best done in the presence of the individual concerned. Unfortunately, this is only possible in small classes to which the teacher can give his undivided attention. In larger ones the exercises should be corrected out of class time—a careful list being made of general errors to be dealt with by the use of the black-board. Special exercises, tending to the elimination of these faults, may be set if needed. The teacher should avoid the temptation to indulge in sarcasm at the expense of any pupil, and in the case of any particularly ludicrous mistake should avoid naming the offender. Children, like older people, are usually particularly sensitive to any ridicule of their literary efforts. Careful, persistent marking, and persevering correction is the secret of success in the final stages of the work of this group.

These remarks apply with equal force to the work of the remaining standards.

Final Stages. The sixth and seventh standards are required to write original essays and letters. Considerable difficulty is experienced in poor schools, owing to the lack of information due to the narrowness of the reading of the pupils, and even in those where access is obtainable to a good school library, or where the home influences develop the minds of the scholars, much training will be found necessary before a subject can be efficiently dealt with in a brief essay. A very simple object, such as a common animal, or tree, may be first chosen. The pupils are questioned orally to collect any information they may individually possess, for the general benefit. They are then led to consider how they would arrange a description of the object, and this leads to the planning out and writing on the black-board of a skeleton outline of the essay, under such heads as:—

(1) General appearance. (2) Habits. (3) Uses.

The information, supplemented by the teacher, if necessary, is classified

under the proper heads, and so the plan of the essay is built up. The divisions should be indicated by paragraphs in the completed exercise. The actual heads should not appear. After several "concrete" subjects have been thus dealt with, the pupils may proceed to write essays independently, save for headings elicited from the class and written on the board as a guide. Test exercises will consist of the giving of the title only of the required essay, and furnishing no aid whatever, though occasionally the title may suggest the line to be taken. Standard VI. will do well to keep to essay writing upon actual objects for the greater part of their course, but in Standard VII. more difficult abstract subjects may be dealt with. Essays upon "honesty," "courage," "punctuality," &c., will call for much intelligence, and the writing of a theme upon a proverb, such as :—"There is no smoke without fire," will be found sufficiently difficult to call out all the powers of the highest standard. The latter are best treated under some such heads as follows :—

(1) Translation of the proverb into ordinary language.

(2) Its application in everyday life.

(3) A short illustrative story.

Advantage may be taken in the essays to convey considerable information relative to the neighbourhood of the school and the town in which it is situated. Such subjects as descriptions of walks, chief buildings, objects of interest, antiquities, &c., are means to this end. Some of the essays may well be worked in connection with the course of geography or history taken.

The chief faults, apart from the ordinary ones of unsatisfactory handwriting, spelling, and grammar, will be found to be those due to a limited vocabulary, involving a very objectionable reiteration of the same word, and a tendency to write extraneous matter. Added to these, some pupils find a difficulty in condensing their answers sufficiently, and often exhaust the space and time at their disposal in dealing with one section only.

Letter-writing should be preceded by careful instruction in the proper methods of heading and closing a letter.

The former should show, on separate lines to the right of the sheet, the address and date. It is usually arranged with name or number of house on the first line, name of street or road on the second, and name of town or date on the third. The date should be in the order of day, month, year, the usual abbreviated form for the name of the month being written. The introductory title given to the person to whom the letter is written is placed to the left hand of the sheet, one or two lines below the lowest line of the address, and varies from the "Sir," or "Dear Sir," of a business communication, to the more familiar forms common to personal

letters. The address and title should be duly punctuated. The body of the letter should begin on the line below the title and to its immediate right. A concise clear style is to be aimed at in business communications, a free friendly one in private letters. On no account should the objectionable, stilted phrases commonly found in the now nearly obsolete, "*Complete Letter-Writers*," be admitted. The closing phrase and signature must be carefully taught. The ordinary business form is,

I remain, Dear Sir,
Yours faithfully,
Charles Robinson,

occupying three lines, and the name and address of the person to whom the letter is sent is usually added in the bottom left-hand corner of the sheet. This is for the information of the clerk addressing the envelope, and also that it may appear on the face of the copy made by the press usually employed. "Private" letters admit of a more familiar ending, which may be left to the choice of the writer, the teacher taking care that good sense is exercised. The signature is commonly the Christian name of the writer, and the name and address of the person to whom the letter is sent is very properly omitted. An error which has crept in of late years among careless writers, is the addition of an apostrophe before the "s" in the pronoun yours.

The scholars should write letters about their holidays, games, lessons, and the like, to their school-fellows; and business letters relative to application for situations and the simpler commercial transactions. Some exercise should be given in the addressing of envelopes. The common faults to be guarded against are:—the want of balance of the address on the envelope, so that by crowding it in a corner or placing it near the top of the envelope, it has an undignified appearance,—and the improper use of courtesy titles, such as "Mr." and "Esq."

An excellent exercise which the writer adopts is to supply the upper class with sheets of note-paper and envelopes and to require them to write a letter on a given subject, to enclose it in the envelope, and to close and address the latter. These communications are read, and remarks relative to any faults are written on them. They are then returned privately to the writers. Such a distinct departure from ordinary school methods has a remarkable effect if judiciously used.

ARITHMETIC.

Its Value. Arithmetic has been styled "the mathematics of the elementary school."

(*a*) The *practical value* of a knowledge of this subject *in ordinary life* is obvious to all. Every man has occasion to use arithmetic to some extent, and business men especially must be able to perform their calculations with rapidity and ease. For this reason alone, therefore, the teacher should strive to make his pupils quick at figures, and ingenious in manipulating them.

(*b*) But the *study of arithmetic has a special and peculiar value in itself*. It offers the means of developing one side of the mind in a way, and to a degree, which no other ordinary school subject can. It ought, in its measure, to afford the same kind of training in methodical arrangement of ideas, in logical processes, and in exact and accurate thought, which the more advanced scholar derives from the study of algebra, geometry, and the other branches of mathematics.

Experience has shown that there is a danger of losing sight of this latter value of arithmetical training, or, at all events, of not estimating it at a proper rate. As the authors of the "*Science of Arithmetic*" remark, it is possible for arithmetic to "degenerate into a mere routine of mechanical rules for working sums," a series of processes which they aptly style "conjuring with figures."

Almost all men are called upon to make calculations in their daily avocations. Comparatively few, however, have occasion to use "Compound Proportion," and "Recurring Decimals, and "Cube Root." And yet valuable time is spent at school in teaching these and similar rules. Such a practice can only be defended upon the ground that the proper study of such subjects is a useful mental discipline, and that the man is likely to be intellectually stronger after undergoing such a training.

"Sciences are not to be esteemed valueless, although they have no use in themselves, if they sharpen and methodize the judgment." (*Bacon.*)

Mathematics are studied, not so much for the practical worth of their facts as for the logical processes through which the mind must pass in learning them. Mathematical study provides the reasoning powers with suitable exercise, and thus strengthens them.

School Arithmetic has two sides, corresponding to its two-fold value.

I. **Computation, the Art of Arithmetic,** *Processes*, "*How to do sums*," *Calculation*, both *mental* and *written*, rightly occupies most time, especially at first.

This is the more mechanical side, though it need not, and should not, be unintelligent. It trains to quickness and accuracy, and it must be used abundantly, if children are to become quick at figures. "Teach principles and reasons as far as your own time and intelligence permit, but, at any rate, make the children good calculators." (*Joyce.*)

II. **Higher mental training,** using the lessons not only to cultivate exact thinking, but also to develop and strengthen the reasoning faculty generally.

Examples may be so dealt with as to lead pupils to discover rules; children can be led to observe, classify, generalize, and reason *inductively*. They may be led to interpret and apply general rules *deductively*.

If **problems** be well selected, and well dealt with by the teacher—*i.e.*, if the teacher causes his pupils to accompany him as he reasons them out, and as he makes the needful computations—such problems afford excellent training.—*Ingenuity* can be cultivated by both forms of arithmetical work and exercise.

In other words, the two points to which the teacher must look are "**Processes**" and "**Reasons.**" Neither of these should be cultivated at the expense of the other. Skill in arithmetic means skill in both departments.

The "*Lesson on Arithmetic*," including dealing with *problems*, is the best means of cultivating the reasoning powers; "*Practical Arithmetic*," and plenty of it, alone can give quickness, correctness, and dexterity in using figures. *To enable the pupil to grapple successfully with arithmetical problems*, it is the teacher's duty to provide numerous duly graduated exercises, and to give him the aid which he requires from time to time. "There is in an elementary school course, scarcely any more effective discipline in thinking than is to be obtained from an investigation of the

principles which underlie the rules of arithmetic. When children obtain answers to problems by mechanical routine without knowing why they use the rule, or when they ask, 'What rule is it?' they cannot be said to have been well instructed in arithmetic."

Scheme B, given in Schedule I. of the Code, offers an excellent opportunity to a teacher who wishes to deal with arithmetic intelligently. The principle of this scheme is that the four simple rules are taught in the First Standard, but the examples to be worked are limited, so that no number higher than 99 is admitted in question or answer, nor is any multiplier or divisor to exceed six. Similar limits are fixed for Standards II., III., IV., and money sums are introduced in the Second Standard. An explanation of the working of the scheme is given in paragraph 24 of the Instructions to H.M. Inspectors. The great argument in favour of the scheme is that the numbers employed are fully within the comprehension of the pupils. They can be made to clearly understand the relative values of the numbers dealt with; the ponderous amounts and lengthy examples often set to the lower standards under Scheme A are excluded, and until Standard V. is reached, the pupils are dealing with quantities of which they have some practical notion. The lessons, of necessity, call for more labour on the part of the teacher, but this is amply repaid by the brightness and intelligence fostered in the pupils.

Use of Concrete and Abstract Numbers. Early work should deal with *concrete* examples—with objects—with what children can actually see or touch. *Number in the abstract* comes properly when children are more advanced. Young children cannot abstract *number* from things. As the facts are brought out by using objects, the strictly *numerical* results in their *abstract* form should be asked for. As power grows, the necessity for the concrete diminishes.

Concrete Examples. A child knows what is meant by "five nuts" or "five cows" long before he can reason about the number "five," and some time even before he can understand what the character "5" stands for. Therefore it is desirable to *make early teaching objective*, or to *associate numbers* in early arithmetical exercises *with the names* of common things.

Teachers know how greatly a little child is *aided in his early attempts* at counting, &c., by noting the objects in the room, by making strokes on the slate, by using his fingers, and by handling the beads on the bead-frame. It is by such exercises that notions of numbers are formed. Pestalozzi is said to have used a *numerating frame*, a sheet of paper ruled

in squares, in each of which different collections of dots were made. Such a sheet might help greatly in addition and subtraction, and to a less extent in multiplication and division.

Concrete examples should be freely used throughout the school course, for the ordinary arithmetical problems of common life are of this character, and their employment in school tends not only to simplify the school work, but to give it a practical and more interesting turn.

Abstract Numbers. "Arithmetic is the easiest, and consequently the first sort of abstract reasoning which the mind commonly bears, or accustoms itself to; and is of so general use in all parts of life and business, that scarce anything can be done without it. This is certain, a man cannot have too much of it nor too perfectly." (*Locke.*)

In this short extract Locke notices three important considerations to be urged on the teacher of arithmetic;—the training it affords for the reasoning powers, its utility in ordinary life, and the necessity for frequent practice in order to render arithmetical training valuable to the learner.

Abstract numbers may be used in all those exercises which have for their object the increase of the pupil's dexterity in manipulating figures. In teaching the actual processes of arithmetic there is no necessity to employ concrete examples. The mistake which is often made in arithmetical teaching consists in the too exclusive attention to processes in which abstract numbers are employed, so that the arithmetic lesson fails to supply all the mental discipline that it may be made to afford, and does not fit the pupils to meet the practical problems of daily experience with readiness. *But processes ought to be taught as such*, and in these lessons on processes, abstract numbers may be used with propriety.

Tables must be learned. But as they are frequently dealt with, they are among the most uninteresting lessons in the school. *Give lessons on tables*, and in these lessons *use objects* where you can; make the lessons *objective;* cause children to *understand* what they are repeating, by enabling them to *form correct ideas* before they repeat.

In the lower classes use the bead-frame, dots, pencils, dominoes, strokes, coins, or any convenient object. Further up the school, utilize the children's knowledge of the lb., yard, pint, shilling, and its parts, in domestic matters of buying and selling, and of paying for what is bought and sold; also show and use a yard measure, a pint, and other measures of length, volume, and weight.

Teach *one* table *at a time*, or even part of a table if that be

After explaining a table in a special lesson or lessons, it should be *carefully committed to memory*.

This is best done by very *frequent repetition in the same order* at first. The teacher must afterwards test by inverting and otherwise *varying the order*. Too often, regular, straightforward repetition of tables is almost all the "teaching" children get: this is unintelligent, though *repetition is the best single appliance for getting children to learn tables*.

Addition and Subtraction. These tables should be taught chiefly with the *bead-frame, or with objects, and the black-board.*

Early work will take the form of counting by *ones*, then by *twos* and *threes*, both forwards (addition), and later on backwards (subtraction). Lessons should be *systematic*, dealing first with addition of *one*, then of *two*, and so on; the teacher may not ask children to add digits irregularly, until he has prepared them for such a test by a course of lessons. *Results*, whether arrived at by counting from the abacus, or by stricter mental work, *should* usually *be set on the black-board;* they then form a good basis for recapitulation, especially if the teacher hides the answers.

Make as much as you can of each result; if children know that 3 and 2 are 5, let them say also "3 from 5 leaves 2, and 2 from 5 leaves 3, because 2 and 3 are 5."

Confine early lessons to numbers below 10 *or* 12. Afterwards go to higher numbers.

A useful piece of apparatus is readily made by stretching two or three parallel strings horizontally across the black-board near the top, a few inches apart, and putting 10 or 12 good-sized beads or other convenient objects on each string. The teacher can set out 6 beads on one string, and 5 on the other, and can set the figures 6 and 5 under each other, but each close to its set of beads. A little addition sum is thus made up, and the objects can be presented or removed as the teacher wishes. The same apparatus could be utilized in lessons on numeration and notation.

Little *questions about nuts, marbles, and toys* furnish useful and interesting tests.

Multiplication and Division.

In first lessons use the bead-frame, and arrange the beads so as to show that multiplication is a form of addition, with the addends alike. *Set down results* on the black-board *in tabular form* for small numbers, or earliest tables; the bead-frame is of little use when large numbers are involved.

Vary the modes of expression; *turn statements about;* twice 3 are 6, $2 \times 3 = 6$, $3 \times 2 = 6$, three times 2 are 6. Have each table *carefully learned*, and *repeated* frequently; *test* as before recommended, dealing with *one table at a time;* 7×6, 7×3, 7×9; 4×7, 7×7, 8×7. *Repetition* is the chief thing.

Connect division and multiplication; if a boy knows that $6 \times 7 = 42$, ask him how many 6's and how many 7's there are in 42; get the class also to say "42 divided by 7 gives 6, and 42 divided by 6 gives 7, because 6 times 7 are 42." Use varied concrete examples as much as possible.

Recapitulatory exercises on the simple tables may be made thus:—Set down a column of numbers on the black-board, and cause children to *add* any two or more digits, to tell the *difference* between any pair, and to tell the *product* or *quotient* of others chosen by the teacher. Advanced pupils may tell the sum of a column, or of 12, 45, 78, and 40; or of 123, 456, 789, 402, or of the whole. Graduated tests in subtraction, multiplication, and division, can be made up in abundance from a set of numbers like that in the margin. A useful mental exercise with numbers of three figures is to cause children to multiply any two of the digits together, and to add the other to the product. If a column of such numbers be written, a class may be kept at work for a considerable time. *The advantage of this plan is that the children are made to go through processes similar to those required in ordinary multiplication, and are well tested in their tables.* It will be seen that *three* or even *six* such problems can be made from a number containing three figures. If there be *four* figures in the number, the problems which can be made from it are far more numerous.

1230
4562
7891
4025

Compound tables.

Lessons ought to be given on each table in turn, and as far as practicable, *actual specimens* of money, of weights and measures, *should be introduced and used* by the teacher and children. Object lessons should be given on tables. Sound ideas could be thus formed; children would know what they are talking about, many absurdities would be prevented, and the work being made intelligent would become interesting.

It would be well if a 22-yard tape, a yard measure, or carpenter's rule, a set of weights with a pair of scales, and some common measures of capacity were found amongst the school apparatus.

Scholars ought also to use them at times, to measure off a few yards, to hold their hands two feet apart, to judge the weight of objects, and then verify their judgments by actual experiment.

After the table has been thus *explained*, it should be *learned by heart* and *repeated* frequently.

Make much of the recognized unit in each table, and show carefully the connection between it and its multiples and sub-multiples. Mental exercises and a tabular statement on the black-board will help.

The day, the yard (linear, superficial, and solid), the lb. (avoirdupois of 7,000 grains, whose ounce is 437½ grains, and troy of 5,760 grains, whose ounce is 480 grains), the gallon, and the sovereign, must be thus dealt with.

q.	*d.*	*s.*	£
4	1		
48	12	1	
960	240	20	1

Give most attention to the weights and measures in common use.

Attend to the yard, quarter, and inch, in cloth measure, rather than to the nail, or the French ell. Act on this principle in all cases.

Certain other points in the tables require special explanation.

For example, the *grain* is the only common weight for the various pounds; the *troy lb.* and the *avoirdupois lb.* differ in weight; the *subdivisions of the ounce* vary in troy and apothecaries' weight (if the latter be used); a *fluid ounce* is not a weight but a measure ($= \frac{1}{20}$ oz.); apothecaries' fluid measure, with its "*minims*" and "*drachms*," requires notice. In angular measure too, it must be shown that the *size of the angle* at the centre of the circle is independent of the size of the circle itself. The *natural standards of time* (year, day) and the *artificial* character of other divisions in all the tables should be noted.

Other points and terms must be dealt with; *leap year; nail, quarter, ell; hand, fathom, chain, link, knot, league*, and the rest.

Children should *learn off some of the more important figures* connected with weights and measures.

They should know that £1 = 240d. = 960q.; that 1 lb. troy = 5,760 grains and 1 lb. avoirdupois = 7,000 grains; that

"One pint of water weighs a pound and a quarter;"

so one gallon weighs 10 lbs. and has a volume of 277.274 cubic inches; that a cubic foot of water weighs 1,000 ozs.; that one ton = 2,240 lbs.;

that a cricket pitch is 22 yards, which is one chain in which there are 100 links. One mile = 1,760 yards = 80 chains, and 640 acres = 1 square mile.

The names used, and the progress from indefiniteness to definiteness as commerce increased, with some indications of the reasons for our different pounds, and different subdivisions of the yard, and a sketch of a few leading enactments, will form good points in these lessons.

Some considerable attention may well be paid to any peculiarities of weights and measures used locally, thus the "dozen" or the "hundred" of eggs, apples, &c., is seldom the mathematical number. The history of the origin of 112 lbs. to the cwt. is interesting. If the lessons in elementary science do not provide the necessary information, the children should be instructed as to the fixing of the standards of length, capacity, and weight, by the government, and they should know the locality and use of the nearest Weights and Measures Office.

To give adequate notions of the relative sizes of the lineal foot and yard, as also of the corresponding areas, a suitable place should be chosen on the school wall on which should be painted a square yard in a darker shade. On this a square foot can be shown and the lines forming the square yard can be divided into three equal parts to show feet.

Mental Arithmetic should occupy a prominent place in the chool time-table.

(1) *It affords a valuable mental training;* for it cultivates *quickness* in seizing the point of a problem, *concentration of mind* in dealing with it, as well as *accurate thought* and *ingenuity* in adapting and using devices in the almost infinitely varied problems that may be proposed.

(2) *In ordinary life*, most of the calculations required are done mentally. This applies not only to domestic affairs and retail business, but often to large transactions; those who have watched the employés in London warehouses as they "extend" their invoices, hardly know which to admire most,—the wonderful accuracy and rapidity of the calculators, or the extent to which business is facilitated by their skill.

(3) *As a school subject*, mental arithmetic is always *popular, if it* be skilfully managed; it therefore serves as an *agreeable change* after many forms of school work. It is, without doubt, *the best introduction to a new rule;* the mental exercises may increase in difficulty, until the learner finds it necessary to use slate and pencil. If boys be allowed to set down the results of their mental calculations up to a certain point, and be then required to perform the more complicated work on a slate, *intelligent work* is encouraged, and more *interest* is evoked in both mental and written arithmetic.

Mental Arithmetic does not receive the attention it deserves in many schools; defective aims and methods are frequent also, where the subject is said to be taught.

Besides its non-employment, or scanty use, we find teachers confining it to abstract rules, which are often ill-understood. Teachers do not recognize the purpose and the possibilities of the exercise; they do not utilize it in the ordinary arithmetic, and the lessons are often immethodical and uninteresting.

Like all other subjects, Mental Arithmetic must be *taught*.

Lessons must be given on *rules and the reasons for them*, and, above all, there must be *abundant suitable practice*. The profit of the lesson is in proportion to the number of questions which have been answered correctly by the pupils.

Suitable exercises for each class should be preparatory to the work of the next higher standard, but they need not be confined to this.

Even little children, who have been taught to count and to handle coins, can soon answer simple questions about money (such as the price of 2 lbs. sugar at 3½d. a lb., the change a boy should bring out of 6d., or 1s., after paying different sums; the number of twopences, threepences, &c., in 6d. and in 1s., and so on). So also where they have received a few *object*-lessons on weight, and have actually weighed out 1 oz, 2 ozs, 1 lb., &c., of sand, other groups of questions can be framed. The same holds when they have measured inches, feet, and yards, and have really formed ideas about them from actually seeing them. Nothing prepares the way for later work so well as exercises of this character, which children near the top of an infant school are fully capable of working. The number 12 especially should receive great attention, and its aliquot parts be well taught.

Addition and Subtraction. Good exercises are formed by starting with a number, and ascending and descending by other numbers, thus—"Begin with 5, and ascend by 3's" (5—8, 11, 14, &c.); or "begin with 20, and descend by 3's" (20—17, 14, 11, &c.). Let each boy give the successive number in his turn; the teacher should listen, but not speak, unless a mistake be made.

Multiplication and Division. Exercises may be based on the tables. Short numbers, such as 123, 243, 562, should be multiplied by 2, 3, 7, &c. Questions on Fractions can also be introduced; *e.g.*, 3 times 12 are 36—how many 3's in 36?—how many 12's?—one-third of 36—⅔ of 36—

$\frac{1}{12}$ of 36—$\frac{2}{12}$—$\frac{3}{12}$—$\frac{1}{3}$, &c.—What part of 36 is 6?—12? &c.—What is the difference between $\frac{1}{3}$ of 36 and $\frac{1}{6}$ of 36? What part of 36 would that be?—12 marbles in each of 3 bags, how many in all? how many in 2 bags?—36 marbles to be distributed amongst 3 boys, how many will each get? how many will 2 get?—What part of 36 will that be;—and so on.

Fractions of a simple kind should come much ea lier than usual, and the teacher should give correct elementary ideas, by cutting up an apple or a potato, or sheets of paper in class.

Money, and Weights and Measures afford unlimited scope for a thoughtful and ready teacher. (Note that in multiplying it is usually best to begin at the left, or with the highest denomination.)

Advanced pupils can be exercised on *numbers*, and on *special rules*, percentages, interest, proportion, and general calculation. The *special rules* found in works on mental arithmetic will be useful for this purpose.

Other hints.

(1) Mental arithmetic lessons should be short; they make a heavy demand, and the strain must not be continued too long. Mental arithmetic should not come immediately after a fatiguing lesson.

(2) Study rules as given in books; explain them thoroughly, then make up some examples for yourself. Do not confine oral exercise to the strict rules, go a little way on each side. For example, having dealt with finding the price of 100 articles, ask for the price of 101, 103, 99, 97, and so on.

(3) Cultivate ingenuity; encourage children to work by different methods. Get them to explain how they work; their explanation, with your comments, will do great good, especially if you can show a readier method.

(4) At least ten minutes of each written arithmetic lesson should be devoted to oral exercises.

A lesson on a new Rule may be mainly (1) *Experimental* and **Inductive**, or (2) the learners may receive it solely on the teacher's **Instruction** and authority.

Assuming the first to be better, the **general plan** of the lesson should be:—

(*a*) *Mental exercises*, short, rapid, both concrete and abstract, increasing in difficulty.

(*b*) Similar exercises worked on the *black-board;* examples of the proper kind should be left on the board side by side, as *objects* from which the rule can be deduced.

(*c*) *Deduce the rule, formulate* it; and see that it is very clearly understood.

(*d*) *Apply it* to fresh examples; work sums by it on the black-board, proceeding from simple to difficult.

(*e*) *Test* children by setting them to work similar examples on their slates. Use the black-board to explain difficulties. In the early stages every sum given should be worked on the black-board.

Illustrations. (1) Suppose a teacher wishes to give a first lesson on Single Rule of Three by the method of Unity.

He should carefully choose his examples that inverse proportion may be avoided and no complex working introduced. He will then show by mental examples:—

1. That if the cost of a number of articles be given, the cost of one is obtained by division, the number of articles being the dividend.

2. That if the cost of one article be known, the cost of any number is obtained by the converse process.

He will then write on the board a simple problem, such as the following. If 9 cows cost £63, what will 21 cows cost?

By questioning he can shew (1) that the problem contains one complete, (2) one incomplete statement, (3) that there are two like terms—"cows," (4) that there is one odd term—money, (5) that the answer required is of the same name as this odd term.

He will then proceed to obtain from the children the complete statement given, in such a form that the odd term comes last, as—Cost of 9 cows = £63.

From the mental exercises they will be able to see the next statement:—

$$\text{Cost of 1 cow} = £63 \div 9 \text{ or } \frac{£63}{9}$$

And finally that

$$\text{Cost of 21 Cows} = \frac{£63 \times 21}{9}.$$

This can now be worked out, cancelling being made use of, if the pupils have any previous knowledge of the process. If not, the multiplication and division in the earlier exercises are best worked out in full.

Further exercises of the same simple nature must be persisted in, the teacher instructing the children to observe always the following cautions:—

(1) That the answer is of the same name as the odd term.

(2) That the answer is greater or less as the problem demands.

The difficulties to be dealt with in future lessons occur in problems which involve preliminary reduction, in order to bring like terms to the same name, and in those in which an extraneous term is introduced.

Inverse proportion involving multiplication in the second statement should certainly not be taken until the simpler form is thoroughly mastered.

After sufficient examples have been worked on the black-board, the class should be set to do one independently on their slates. The problems set should gradually vary more and more in their wording from those worked in the earliest tests. Some little difficulty is to be expected in the composition of the first line. The teacher should pay very careful attention to this, and always insist on it being written in the form of a simple sentence, and not in the form of a meaningless phrase. It is advisable to spend some time on the thorough exposition of this method of unity, as many problems in the more advanced rules of interest, percentages, and stocks, are easy to solve by its application.

Further hints. (1) In an ordinary Arithmetic lesson to a large section, when the boys have some knowledge of the rule they are working, but when they manifest great differences in their ability to work examples upon it, the teacher may proceed thus :—

(*a*) Work an illustrative example upon the black-board, as short as possible, provided it be effective.

(*b*) Set a similar example to be worked by the class, after making proper arrangements to prevent copying, and keep a sharp look-out yourself, to see that all make an honest attempt to do it.

(*c*) After giving a reasonable time, cause slates to be shown; pass rapidly round the class, and see whether it will be necessary to give a fresh lesson to the whole class, or whether the majority of the boys are in a fair way to solve the question. In the latter case, call out the dull scholars and let them bring their slates. Show them again, and cause them to make a fresh attempt for themselves. Those who now seem to understand should be sent back to their place to work with the bulk of their classmates. This process of elimination should be continued, until but two or three very dull boys are left. The teacher will be able to concentrate the greater part of his attention upon these on other occasions, until they also can acquit themselves fairly. He should cause such dull boys to sit where he can easily supervise them, and he may set himself free to devote his attention to the rest of the class, by using some of his sharpest lads as monitors to attend to the dullards, when these sharp boys have finished their own work.

(*d*) Every boy must have "something to do" all the time. After he has finished his work, let him sit or stand in accordance with an

understood rule, and remain perfectly still. But you must be on the look-out, that no boy may waste his time by being unemployed at arithmetic, during the time set apart for the arithmetic lesson. *All members of the class should be usefully employed throughout the lesson.*

(*e*) Your duty is to *see that all the boys know how to do their work, and to see that they do it.* To this end you must show and explain frequently, not assuming that they all know how to proceed because most of them do, or because you know yourself, or because you "have told them." In fact, it is often advisable to assume that the rule is not understood, and to proceed to careful and detailed explanation in consequence. You ought to repeat your explanatory lessons frequently, and your use of the black-board should be constant. *This is in fact the most important point of all in teaching arithmetical processes.* Teachers cannot well make their explanations too simple, or use the black-board too freely, especially in the lower classes, if they can but secure honest endeavour on the part of their pupils. The rest of the matter, causing boys to try their utmost in working at their sums depends, as in all other such cases, upon the hold which you have acquired over them, and upon your power of getting work out of them.

(2) Try to *cultivate intelligence and independent thinking.*

Encourage children to work out your questions in their own way. If their methods be roundabout and cumbrous, they will be the more ready to appreciate and act upon any better plan you show them. It is a mark of weak teaching when children fail to deal intelligently with simple problems presented in an unaccustomed form.

(3) *Allow no copying.* The teacher will succeed in stopping this evil if he always treat it as a serious offence, and if he can impress his boys with the idea that *they are sure to be detected* if they are guilty of it. A shrewd, lynx-eyed, and powerful teacher, in a class of but moderate size, may, if he choose, prevent it by sheer determination. But in daily work, with a large section, and with teachers of ordinary power, arrangements should be made which *render it impossible for the boys to copy* from one another. This is the only way by which honest work may be certainly ensured.

Supposing that the discipline of a large class is good, a plan of this kind may be adopted :—Cause the boys to sit at a fair distance apart, and so that each boy in one desk or seat is exactly behind his fellow in front. Pass

along the front desk, and call alternate boys A and B; tell "A boys" to stand, and cause all those immediately behind them to stand also. You thus divide your section into two groups, and no two members of the same group are very close together. By acting in this way with alternate desks, and introducing A, B, and C, or A, B, C, and D, you may secure any necessary isolation. But note, that *the more powerful the teacher, the less the necessity for complicated devices.* Having divided the section thus, each set of boys should have a different sum. A sharp teacher may secure the necessary variety in addition, by altering the arrangement of the same addends, and by giving one different addend to each set, or by making different pairs of addends (not adjacent to one another) together equal to 100, 1,000, or some other power of 10, and interpolating an irregular line of figures. In subtraction, either minuend or subtrahend may be altered. In multiplication, one of the factors may be halved or doubled, &c., and so with division. By such arrangements the teacher can obtain several answers easily, and will have time to exercise proper supervision, which would be impossible if the sums be altogether different, and if he work out each separately.

It is desirable to insist upon *silent* work at arithmetic. A word from a classmate is often enough to prompt a boy who is in a difficulty, and the teacher is thus liable to be deceived as to the real knowledge of the pupil. When boys "mumble" as they work, some are almost sure to obtain surreptitious aid.*

(4) As a rule, *keep answers out of sight*, until the work has been finished.

If answers are accessible, children are sure to work to them, and thus really get unfair help. They are also tempted to alter figures to make wrong work seem correct.

(5) *Use problems* involving *concrete and abstract* numbers.

Each should be used in its place, and in accordance with what has been said previously.

(6) When using numbers, *dictate* them. Cause the children to *read* their answers in words.

* Perhaps there is no detail of school work in which difference of power in teachers is more manifest than in this matter. The writer has had the opportunity of noticing this with students in practising schools, when a weak teacher follows one who is well up to his work. The mischievous effects of loose discipline are almost sure to appear here first.

Endeavour to keep up a knowledge of notation and numeration in this way.

(7) *Encourage neatness and care.*

Remember that quickness and accuracy usually go together in arithmetic. *Do not, however, confound hurry with rapidity.* A certain amount of painstaking in shaping the figures and ruling the lines is really an aid to accurate work.

(8) *Encourage boys to use short methods and extended mental work.*

Try to connect mental and written arithmetic. For example, the elder boys should multiply by 25 or by 125 in one line, and by 2,884,816 in three lines, exclusive of the answer. Encourage "*cancelling*," and all concise modes of working. *Do not, however, allow a boy to rub out his actual work;* and as copying becomes easier when these methods are adopted, great vigilance must be used.

(9) *Short examples are generally the most useful* in practical work.

Such examples are sufficient to show whether the pupil understands principles or not; a mistake in calculation does not involve the same amount of disgust in the pupil who has to alter his work in consequence of it; more work will be done by the whole class in the same time. Lengthy examples should be rarely given, as they involve severe mental strain, and are of little practical value.

But it is well sometimes to give a long sum to test general accuracy. If such an exercise can come a few minutes before twelve o'clock, and boys be allowed to go home as they finish their sum, a good effect is almost always produced.

(10) Enable children to be well-nigh *certain that they are right.*

This can be done by seeing that they understand what they are doing, that they are trained to expertness in figuring, and then by reasonable but constant insistence on accuracy. If they can do the work, the teacher may fairly say "Do it."

(11) *Encourage boys to prove their work,* either by the usual methods, or better, by working the same exercise by an independent method.

A sum in subtraction or division should rarely be passed without being proved. The teacher must see that the pupil *does* go through the needful operations and does not merely copy a certain row of figures, or manipulate them so as to fit. *No sum should be passed until it is correct.*

(12) Be careful to *examine each boy's work properly.*

Pass round the class whilst they are at work, explain and show where it is necessary, and at the end of the lesson have slates shown, and examine every boy's work. *Personal contact of the pupil with the teacher is needed in all school work.* The final cursory examination of the sums is not enough in arithmetic; it should supplement, not supersede, the previous individual examination.

(13) *Arithmetic books.* It is well for boys to have text-books of their own, which contain a large number of suitable examples. Good and cheap books of this kind are numerous now.

The teacher should set sums on the black-board to be worked by the "A and B boys," and should tell them where to go on from their books *after they have finished the sum which he has given; e.g.*, "A's to begin at No. 13, on page 17, and to work the sums with odd numbers, B's to work those with even numbers, beginning with No. 14." Those boys who succeed in getting the original sum correct, and in doing a large number of other exercises, should have an "extra" mark on the mark slate. The use of the first sum is to test the back work, and of the book work to keep all usefully employed at suitable examples. With proper supervision the teacher may allow boys to work on steadily through their books, and the sharpest lads will make more rapid progress in this way. Care must be taken that difficulties are not shirked by dishonest pupils. The teacher must mark the books with a mark difficult to be imitated, or must tell the boys where to begin on every occasion.

(14) Try to get boys to work at *rules which embody several others.*

For example,—*Long Division* proved by multiplication, furnishes an exercise in all the simple rules; *Rule of Three* may be made to give practice in Reduction of Money and of Weights and Measures; the *Mensuration* of Triangles leads boys to see the use of Square Root, &c.

(15) *Let your language be precise, exact, and definite.*

This is an important matter in an exact science like arithmetic, although teachers sometimes do not regard it as such. It is not uncommon to hear one number described as so "*much* greater," instead of as so "many

times greater" than another, or to hear a Vulgar Fraction thus spoken of, —"The Denominator shows how many *parts* the whole is divided into, and the numerator shows how many of these parts are taken." The word "*equal*" should be inserted before the italicized word "*parts*" in this case. No teacher ought to regard such matters as trivial; he will not fall into this error after he has made fair progress in mathematics. (Cases have come under the writer's observation in which students have failed to secure so high a mark as they would otherwise have obtained, from carelessness on this very point.)

(16) "In Arithmetic, above all other subjects, very clear step-by-step teaching is needed, constant supervision, and retrospective examination to realize whether what has been taught has indeed been apprehended, careful exposition of principles, with much variety of example and illustration." (*Mr. Brodie, Report*, 1877.)

Special Methods to be employed in the common rules of Arithmetic.

In the following hints an attempt is made to show that it is possible to teach arithmetic in accordance with the principles which have been enunciated in this paper. The writer's experience has convinced him that sounder knowledge is acquired, and more rapid progress is made in the end by teaching arithmetic in this way than by teaching it empirically, and he has proved the practicability of every one of the following methods. At the same time it must be distinctly understood that other teachers will find it necessary to modify and amplify these plans in their own case; much more elucidation and many more examples will be needed in actual teaching. These hints are intended to give direction to the teacher's own thoughts; they will be but a poor substitute for thinking on his part. They are all more or less fragmentary, and only aim at suggesting the general plan on which the different lessons may be given.

Counting lies at the basis of all calculation.

In elementary lessons on number, counting must take a leading place. Give little children plenty of practice in *counting and dealing with numbers up to* 10; this is the most important stage. They may go afterwards from 10 to 20, and then to higher numbers. Later on, they will count backwards as well as forwards.

Use the bead-frame and objects in early lessons; fingers should never be used as aids, lest they be relied upon in abstract counting.

The whole exercise should be preparatory to addition, subtraction,

numeration, and notation, and it may pass on to elementary mental arithmetic of a simple kind, such as counting by twos, threes, and higher numbers, both backwards and forwards.

Note. *Children should not begin to work sums until they are fairly expert in counting.*

Notation and Numeration should be taught together.

(*a*) *Numbers up to* 10 should be taught first. Use the bead-frame to show what the characters mean.

(*b*) *Two figures.* (1) *up to* 20, by showing each in turn, requiring the children to read and to write it, and using the bead-frame.

(2) *From* 20 *to* 99, in the same way, except that the use of the bead-frame may generally be dispensed with. Give practice with such numbers as 18 and 81, 61 and 16, &c.

(*c*) *Three figures in all possible combinations.* This is the most difficult stage.

Young children can scarcely be expected to understand elaborate lessons on the "*device of place;*" the teacher will prepare the ground for these, and will secure more rapid progress in this early stage by giving examples rather than reasons. Yet he may give ideas on the matter by having 10 small sticks, 10 bundles, each containing 10 similar sticks, and another bundle of 100 sticks made up of packages of 10's. By manipulating these fairly, and with the black-board ruled in columns, he ought to make the road clear.

Hundreds.	Tens.	Ones.

Stages *a* and *b* having been mastered, many exercises in setting down numbers of three figures, and in reading such numbers should follow. The "0" should be introduced, and its value shown in all places which it can occupy—100, 010, 001. Children should be required to set down "*five in three figures*" (005), "*twenty in three figures*" (020), and similar examples should be given until the children are perfect.

(*d*) *All higher numbers* are read and should be set down in periods of "three." It is almost as easy to proceed to "millions," as to go on to "thousands," if stage *c* be mastered. Boys should at first be required to set *three figures in each column*, and to put "millions" and "thousands" in their proper column. The 0's on the left, which are not needed, may be rubbed out, and commas (,) may be substituted for the vertical lines as the children become expert.

M	T	U

When they are desired to *read* numbers, they should be taught to *mark the numbers off in threes*, beginning with the units; reading is then easy.

Of course the teacher will not stay to teach boys to set down and to read these high numbers, before he begins to teach addition and subtraction. Numeration and notation should be taught incidentally for the most part, although formal lessons will sometimes be needed.

Addition. (*a*) *Plenty of work at processes* is the great desideratum with such young children as are commonly learning to add.

(*b*) *Mental exercises* with numbers less than 10, until children can at once tell the sum of any two of these numbers. *They should be allowed to count from the bead-frame, or to use any other mechanical devices*, provided these can be put aside (at will) whenever a difficulty arises. Use concrete numbers.*

(*c*) *Exercises involving three or four digits and numbers containing two figures* may follow. This is the proper place for introducing slates, and working on the black-board. *Show the objects on the bead-frame, and the corresponding figures on the board.*

(*d*) After the children have become familiar with easy numbers, those which are more difficult should be taken. *Exercises of this character should be continued until the child has acquired fair practical skill in adding.*

After this point has been gained, the "Lessons on Principles" may be given. Theoretically these should come first, but they would be practically incomprehensible until the children have acquired some idea of number, and this is picked up insensibly while they are working at the foregoing exercises. If, however, the teacher have used sticks or other suitable objects in teaching early Numeration and Notation, he may teach the principle of Addition without difficulty from the first.

Decompose the addends:

7495	is	7	thousand	4	hundred	9 tens	and	5.
1869	is	1	thousand	8	hundred	6 tens	and	9.

Add each column separately, and we obtain :—

8 thousands 12 hundred 15 tens and 14.

* Counting is *not to be encouraged*; the teacher should *allow* it only when the child is in doubt, and only because it enables the beginner to *be sure he is right, a point which cannot be too strongly insisted on in Arithmetic.* But the practice will keep the child back if it be continued too long. Strict mental work should come as soon as possible.

But :

	T	H	T	U
14 is equal to 1 ten and 4 units			1	4
15 tens are equal to 1 hundred and 5 tens		1	5	
12 hundreds are equal to 1 thousand and 2 hundred	1	2		
8 thousands are equal to 8 thousand	8			
	9	3	6	4

If the sum of any of the columns were more than 9, that number should be decomposed as above and the proper part added to the next column. Suppose the total had been 7 thousand, 15 hundred, 13 tens, and 4; we should have—

	7	15	13	4
	T	H	T	U
4 is				4
13 tens are . .		1	3	
15 hundreds are .	1	5		
7 thousands are	7			
	8	6	3	4

"*Long* Addition is the most difficult process in arithmetic." *All the exercises should be very short* with young children, and the teacher should *show them how to work every sum* on the black-board.

Subtraction. (*a*) *Addition and Subtraction of mental exercises should be taken together.* "4 and 7 are 11;" "the difference between 11 and 7 is four." *This should go on until they know the sum and difference of any two easy numbers.* The teacher should start with 10 objects (beads or nuts), and subtract successive numbers; then take another minuend and proceed as before, taking care to bring out the connection between addition and subtraction, by alternating the exercises. Use concrete examples very freely.

(*b*) *Similar exercises should be worked on the black-board.* These exercises should be framed in such a way that the children may be led to see that *we subtract the whole number when we subtract all its parts.* They should work such sums as these :—

$$\left.\begin{array}{r}17 - 2\\17 - 5\\17 - 12\end{array}\right\} \quad \left.\begin{array}{r}28 - 3\\28 - 14\\28 - 25\end{array}\right\} \quad \left.\begin{array}{r}368 - 114\\368 - 225\\368 - 308\end{array}\right\} \text{and many more.}$$

Next, they should be led to see that it is impossible to subtract all numbers in parts from the corresponding parts of other numbers. The *necessity for some rule for decomposing numbers* is shown by examples such as these :—

$$\left.\begin{array}{l} 356 - 125 \\ 356 - 156 \\ 356 - 157 \\ 356 - 167 \end{array}\right\} \qquad \left.\begin{array}{l} 631 - 630 \\ 631 - 530 \\ 631 - 532 \\ 631 - 458 \end{array}\right\} \text{ and others.}$$

(*c*) *The children are now ready to receive the explanation of one of the ordinary methods of working subtraction.* Simple exercises should be taken first, so that the bead-frame may be used in explaining the decomposition of numbers, and in showing that the differences between two numbers is unaltered, if we add the same number to each.

1. **Method of Decomposition.** Take 29 from 42. *With the bead-frame* show that.................... 42 is $\left\{\begin{array}{l}\text{4 tens and 2} \\ \textit{or}\ \text{3 tens and 12}\end{array}\right.$
and that 29 is 2 tens and 9

so that the difference required is 1 ten and 3
or 13.

Show the same process on the black-board, and proceed to other examples, when you think the principle is understood : *e.g.*,

	563	is	4 hundred	and	15 tens	and	13
	384	is	3 hundred	and	8 tens	and	4
The diff. is	179	or	1 hundred	and	7 tens	and	9

Children would be taught to decompose by "taking" one from the next left-hand value, and adding it to the right. The above exercise would appear on the black-board thus :—

$$\left\{\begin{array}{ccc} 4 & 15 & 13 \\ \hline \cancel{5} & \cancel{6} & 3 \\ 3 & 8 & 4 \\ \hline 1 & 7 & 9 \end{array}\right.$$

N.B. Decomposition becomes difficult when several 0's occur in the minuend.

2. **Method of Equal Additions.** *Preparatory exercises will be needed.* With the bead-frame show that the difference between 9 and 4 is the same as that between (9 + 1) and (4 + 1)
(9 + 7) and (4 + 7)
(9 + 10) and (4 + 10)
and so on with other easy numbers.

Now propose such a question as "*What is the difference between 29*

and 42?" The children should be prepared to see that $42 - 29 = (42 + 10) - (29 + 10)$ by showing the process upon the bead-frame. The ordinary method by which 29 is taken from 42 in practice should then be gone through upon the black-board.

For 42 we take	4 tens	and	12	=	52
and for 29 we take	3 tens	and	9	=	39
The difference 13 is	1 ten	and	3	=	13

Or, the difference between 42 *and* 29 *is the same as that between* 52 *and* 39.

Another example:—

For 342 we take	3 hundred	14 tens	and	12	=	452
and for 179 we take	2 hundred	8 tens	and	9	=	289
The difference 163 is	1 hundred	6 tens	and	3	=	163

Or, the difference between 342 *and* 179 *is the same as that between* 452 *and* 289.

The teacher will find it necessary to analyse many examples before his young pupils will be able to see the reasons for the processes they use.

(*d*) *Cause the children to prove their sums.* If Addition and Subtraction be taught in connection, it is easy to show the reasons for this process. The expressions "borrowing" and "paying back" should not be used.

Multiplication. Boys should learn the ordinary multiplication table by heart, and should repeat it frequently. In the lower classes, "Tables" should occupy a considerable part of the school-time, and the multiplication table should be attacked from the first.

(*a*) *Mental exercises and bead-frame and black-board* to show that multiplication is a shortened form of addition, in which addends are all alike.

$$\left.\begin{array}{r}1\\1\\1\end{array}\right\}\ 3\ \text{"}\textit{ones}\text{" are } 3; \qquad \left.\begin{array}{r}3\\3\\3\end{array}\right\}\ 3\ \text{"}\textit{threes}\text{" are } 9; \qquad \left.\begin{array}{r}8\\8\\8\\8\\8\end{array}\right\}\ 5\ \text{"}\textit{eights}\text{" are } 40$$

$$\begin{array}{r}\underline{\ \ 3\ \ }\end{array} \qquad \begin{array}{r}\underline{\ \ 9\ \ }\end{array} \qquad \begin{array}{r}\underline{\ 40\ }\end{array}$$

(*b*) Boys are supposed to know how numbers may be decomposed, and also to know their tables. *Work an illustrative example, e.g.:—Multiply* 3,647 *by* 3.

	3,647 is	3 thousand	6 hundred	4 tens	and 7
Multiplied by	3				
or	10,941 is	9 thousand	18 hundred	12 tens	and 21

Show the "carrying" thus :—

	T	H	T	U
9 thousands are	9			
18 hundreds are	1	8		
12 tens are		1	2	
21 units are			2	1
	10	9	4	1

Or, the process may be thus shown :—

$$\begin{array}{rcrcr} 3,000 & \times & 3 & = & 9,000 \\ 600 & \times & 3 & = & 1,800 \\ 40 & \times & 3 & = & 120 \\ 7 & \times & 3 & = & 21 \\ \hline 3,647 & \times & 3 & = & 10,941 \end{array}$$

(*c*) *Work the same and similar examples on the* black-board *in the ordinary way : e.g.*,

$$\begin{array}{r} 3,647 \\ 3 \\ \hline 10,941 \end{array}$$

And then set the boys to practical work of the same kind.

(*d*) *Introduction of* "0" *into the multiplier.*

1. Multiply in turn 1, 2, 3, &c., 12, 13, 19, 75, 693, &c., *by* 10, to show that this operation may be performed by adding "0" to the multiplicand.

2. With similar easy numbers, proceeding to difficult, show that two ciphers added to the right of the multiplicand multiplies it by 100, three by 1,000, &c.

3. Show that 20 = (10 × 2), and that we multiply by 20 by multiplying first by 10, as above, and then by 2. Lead the boys on to such exercises as 5,974 × 8,000, which should be worked thus :—

$$\begin{array}{r} 5,974 \\ 8,000 \\ \hline 47,792,000 \end{array}$$

(*e*) *Multiplier to contain two or more figures : e.g.*,

$$\begin{aligned} 7{,}519 \times 543 &= 7{,}519 \times 500 = 3{,}759{,}500 \\ &\quad + 7{,}519 \times 40 = 300{,}760 \\ &\quad + 7{,}519 \times 3 = 22{,}557 \\ &\qquad\qquad\qquad\qquad \overline{4{,}082{,}817} \end{aligned}$$

Then show this process in the ordinary way, and give examples to be worked by the boys.

$$\begin{array}{r} 7{,}519 \\ 543 \\ \hline 22{,}557 \\ 30{,}076 \\ 37{,}595 \\ \hline 4{,}082{,}817 \end{array}$$

(*f*) *Multiplier broken up into factors.* With illustrative examples show that we multiply by a number when we multiply by its factors : *e.g.*,

$$\begin{aligned} 519 \times 12 &= 6{,}228 \\ 519 \times 6 \times 2 &= 6{,}228 \\ 519 \times 4 \times 3 &= 6{,}228 \\ 519 \times 2 \times 2 \times 3 &= 6{,}228 \end{aligned}$$

Encourage boys to work such exercises by different sets of factors where it is possible, and thus to prove their work.

It is a *good preparation for compound multiplication* to cause the boys to analyse the multiplier in simple multiplication and then work their sum in two or three ways : *e.g.*,

$$\left.\begin{aligned} 79 &= (8 \times 10) - 1 \\ &= (12 \times 6) + 7 \\ &= (9 \times 8) + 7 \\ &= (9 \times 9) - 2 \end{aligned}\right\} \text{ and so on.}$$

Division should be connected with multiplication. The multiplication tables should serve for exercises in division.

(*a*) *Mental Exercises* should be taken first to give facility in the subsequent processes. The skilful teacher will now be able to introduce great variety into his questions, which should be concrete. Such exercises would prepare boys to appreciate and to comprehend the subsequent lessons on fractions. Questions on the money tables, and the tables of weights and measures should be freely given.

(*b*) *Show that Division is a shortened form of Subtraction*, when divisor and dividend are abstract numbers or concrete quantities of the same name; and it is the opposite of multiplication.

"In multiplication you have a number of heaps, with the same number of pebbles in each, and you want to know how many *pebbles* there are in all. In division you know how many there are in all, and how many there are to be in each heap, and you want to know how many heaps there are." *De Morgan.*

Addition and Multiplication. *Subtraction and Division.*

$$\left.\begin{array}{r}3\\ \underline{3}\\ 6\\ \underline{3}\\ 9\\ \underline{3}\\ \underline{12}\end{array}\right\}\text{“}\textit{Four 3's are 12.}\text{”}\qquad\qquad \left.\begin{array}{r}12\\ \underline{3}\\ 9\\ \underline{3}\\ 6\\ \underline{3}\\ \underline{3}\end{array}\right\}\text{“}\textit{There are four 3's in 12.}\text{”}\qquad \left.\begin{array}{r}17\\ \underline{5}\\ 12\\ \underline{5}\\ 7\\ \underline{5}\\ \underline{2}\end{array}\right\}\text{“}\textit{There are three 5's in 17, and 2 remain.}\text{”}$$

(*c*) *Work an illustrative example*, and in it try to connect both Short and Long Division. *e.g.*, *Divide* 65,301 *by* 7. Now, "we divide one number by another, when we divide each of the parts of the one by that other." So that if we break up 65,301 into suitable parts, and divide each of these parts in turns by 7, and add the quotients together, we shall obtain the quotient of 65,301 divided by 7.

$$\begin{array}{lr}\text{Now } 65{,}301 = & \left.\begin{array}{r}63{,}000\\ +\ \ 2{,}100\\ +\ \ \ \ 140\\ +\ \ \ \ \ \ 56\\ +\ \ \ \ \ \ \ \ 5\end{array}\right\}\end{array}\ \begin{array}{c}\text{which contains 7}\\ ,,\\ ,,\\ ,,\\ ,,\end{array}\ \left.\begin{array}{r}9{,}000\\ 300\\ 20\\ 8\\ 0\end{array}\right\}\ \begin{array}{c}\text{times}\\ ,,\\ ,,\\ ,,\\ ,,\end{array}$$

Therefore 65,301 contains 7 9,328 times, and 5 are left.

This may, perhaps, be made clearer by writing thus:—

63 thousands contains 7 9 thousand times,
21 hundreds ,, 3 hundred times, &c.

[*Or the connection between Multiplication and Division may be brought out* by working a Multiplication sum, as 3,647 × 3 (*see page* 239), and then divide 10,941 by 3, decomposing the numbers as shown under Multiplication.]

Write out the ordinary process at length, thus:—

7 is not contained in the first figure 6, but the first and second figures 65 contain 7 *nine* (9) times, with 2 remaining.

But so also 65 thousands (65,000) contain 7 nine thousand (9,000) times and two thousands (2,000) are left.

```
7) 65,301 (9,000 + 300 + 20 + 8
   63,000     or 9,328 with 5 over
   ------
    2,301
    2,100
    -----
      201
      140
      ---
       61
       56
       --
        5 over
```

Subtract 9,000 times 7 from 65,301, *i.e.*, subtract 63,000, and we have 2,301 left.

Proceed in the same way with the remainder. 7 is contained in 23 three (3) times and 2 over. So that 7 is contained in 23 hundreds (2,300) three hundred (300) times, and two hundred (200) are left. Subtract 300 times 7 from 2,301, *i.e.*, subtract 2,100 and 201 are left.

In the same way show that 201 consists of 14 tens and 61, and contains 7, two tens (20) of times with 61 left.

Lastly, 61 contains 7 eight times, with 5 left.

Add all the quotients as above.

It will be observed that this process is that ordinarily known as "*Long Division*." But we really go through the same process in "*Short Division*," although in this latter case the divisor is so small that we can readily calculate its multiples, and subtract them from the corresponding parts of the dividend.

(*d*) *Work the same example by ordinary "Short" Division.*

```
7) 65,301
   ------
   9,328 + 5
```

(*e*) *Give other examples to be worked* by both the "Long" and the "Short" methods, and show the pupils that the ciphers need not be set down when they are skilful enough to do without them.

> The above is, perhaps, the best method of teaching the *principle* of this rule. Most practical teachers prefer to begin with Short Division, and to teach it empirically, and afterwards to go on to Long Division. But in any case, an attempt, or even repeated attempts if necessary, should be made, to lead boys to see the reasons for the processes they adopt. It would take a longer time for boys to get to work at the rule if the plan herein laid down be adopted, but the work would be intelligent, and the progress would be more rapid in the long run.

(*f*) *If the Divisor be broken up into its factors*, boys are likely to have a difficulty with the remainder. This will be obviated if the teacher can give them a clear idea of the value of each line.

e.g. Divide 74,393 by 28.

$$28 = \begin{cases} 7)\ \underline{74{,}393} \\ 4)\ \underline{10{,}627} \text{ sevens } + 4 \text{ units} \end{cases}$$

$$2{,}656 \text{ twenty eights } + \overbrace{3 \text{ sevens } + 4 \text{ units}}$$

$$\textit{or } 21 + 4$$

$$\textit{or } 25$$

Then enunciate the rule for finding exact remainder, and give other examples.

(*g*) *Multiplication and Division by mixed numbers.*

1. If **Multiplication** has been taught as a mode of addition, it is easy to show that $5\frac{1}{4}$ times 64 is equal to 5 times 64 added to one quarter of 64, and so of other similar cases. If the multiplier contain a difficult fraction the teacher should lead the way up to it by giving mental exercises similar to those in (*a*), and set the same on the board : *e.g.*,

$$\begin{aligned} \tfrac{1}{12} \text{ of } 36 &\text{ is } 3 \\ \tfrac{5}{12} \text{ of } 36 &\text{ is } (5 \times 3) = 15 \\ \tfrac{7}{12} \text{ of } 36 &\text{ is } (7 \times 3) = 21 \\ 8\tfrac{7}{12} \times 36 &= (8 \times 36) + (\tfrac{7}{12} \times 36) \\ &= 288 + (\tfrac{1}{12} \text{ of } 36 \times 7) \\ &= 288 + 3 \times 7 \\ &= 288 + 21 \\ &= 309 \end{aligned}$$

He may prepare the way for the more difficult case in which the denominator of the fraction is not contained exactly in the multiplicand by showing that

$$\tfrac{5}{12} \text{ of } 36 = \tfrac{1}{12} \text{ of } (5 \times 36)$$

$$\tfrac{7}{12} \text{ of } 36 = \tfrac{1}{12} \text{ of } (7 \times 36)$$

Then he may *educe the ordinary rule for multiplying an integer by a fraction.*

2. The reasonableness of the plan which is adopted in the corresponding case in **Division** may be thus shown :

$$\frac{2}{2}\ \frac{6}{2} \qquad \frac{2}{3}\ \frac{6}{3} \qquad \frac{2}{4}\ \frac{6}{4}$$

$$4\,)\,\underline{12} \qquad 6\,)\,\underline{18} \qquad 8\,)\,\underline{24}$$

$$\quad 3 \qquad\qquad 3 \qquad\qquad 3$$

i.e. Multiply Divisor and Dividend by the same number, 2, 3, 4, 5, *&c., in succession, and show that the quotient in each case is the same.*

Take similar examples with another divisor and dividend, if necessary, and thus lead the way to such cases as $75 \div 2\frac{1}{2}$, $99 \div 2\frac{1}{4}$, $85 \div 3\frac{3}{8}$, &c.

Be careful to let the boys understand the value of each line, or they will have a difficulty with the "Remainder."

Reduction. The simpler cases should be taught as soon as boys are perfect in multiplication and division of the whole numbers. Their subsequent work at compound rules is thus simplified, and they put the knowledge and skill they have acquired to a practical use.

In reduction the object is to express the same value under different denominations. In teaching it, *the teacher must endeavour to show the denomination of each line that is obtained by the various processes.* If he can succeed in getting his pupils to see this clearly, and to use their thoughts properly, all the simpler cases of this rule can be easily mastered.

Use the idea of *exchanging* a value expressed in one denomination for its equivalent value expressed in another denomination; *e.g.*, exchange £1 5*s.* 0*d.* for shillings, sixpences, fourpences, pence, farthings. Do this with many examples, mental and written.

In all the processes of Reduction, whether "ascending" or "descending," cause the boys to write the proper denomination opposite to each line: *e.g.*,

1. *Reduce £5 9 $7\frac{1}{2}$ to halfpence.*

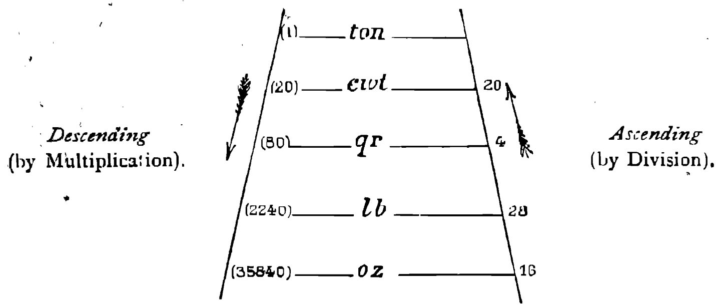
$$\begin{array}{rl}
\text{£ } \ s. \ \ d. & \\
5 \ \ 9 \ \ 7\tfrac{1}{2} & \\
20 & \\
\hline
109 & \text{shillings} \\
12 & \\
\hline
1{,}315 & \text{pence} \\
2 & \\
\hline
2{,}631 & \text{halfpence} \qquad \text{Ans.}
\end{array}$$

2. *How many half-crowns in 5,500 farthings?*

$$\begin{array}{l}
4)\ 5{,}500 \text{ farthings} \\
\hline
3{,}0)\ 137\ 5 \text{ pence} \\
\hline
\quad 45 + 25 \\
\text{H. Cr.} + \text{pence} \\
\hline
\end{array}$$

The more difficult cases should be taken with and after the compound Rules.

Ascending and Descending Reduction may be further illustrated thus:



Compound Rules. Money, and Weights and Measures. Some teachers teach the Compound Rules *with* the corresponding Simple Rules, Compound Addition with Simple Addition, &c.

In principle, this is the best method, and there are teachers who achieve good results by this plan.

More commonly, the Simple Rules are first taken, and then the Compound, as it is found in practice that skill in Simple Multiplication and Division is a great help in all Compound Rules.

In any case, *the teacher must try to make clear the "principle of carrying," and to show its extension to the several cases that occur* in dealing with Money and Weights and Measures. If this be well understood, the boys will find little trouble in proceeding to the Compound Rules, especially if they have passed through the Simple Rules in the way we have recommended.

The writer has proposed the following question to pupil teachers and students on more than one occasion: "*Assuming that a class of boys know how to work Simple Addition, and that they know their tables, frame a series of questions (with their probable answers), to show that it is possible to lead boys to discover the rule for Compound Addition for themselves.*" He now offers this as an exercise for pupil teachers, and advises them to show the connection between other Simple and Compound Rules in the same way. The following hints may be useful.

	10	10	10		20	12	4
T	H	T	U	£	s.	d.	q.
5 6 8	9 1 4 7	8 2 1 2	3 2 1 0	5 6 8	9 1 4 7	8 2 1 2	3 2 1 0
19	21	13	6	19	21	13	6
	2+1	1+3			1+1	1+1	1+2
21	2	3	6	20	2	2	2

£	s.	d.
5	9	$8\frac{3}{4}$
6	1	$2\frac{1}{2}$
8	4	$1\frac{1}{4}$
	7	2
20	2	$2\frac{1}{2}$

	T	H	T	U
19 Thousands are	19	0	0	0
21 Hundreds are	2	1	0	0
13 Tens are		1	3	0
6 Units are				6
	21	2	3	6

	£	s.	d.
£19 are	19	0	0
21 *sh.* are	1	1	0
13 *d.* are		1	1
6 *q.* are			$1\frac{1}{2}$
	20	2	$2\frac{1}{2}$

Extend the illustrations so as to include easy cases of *Long Measure* (yards, feet, inches) and *Avoirdupois Weight* (cwts., qrs., lbs., oz.)

The *sums should be proved by Reduction* whenever this is possible. Working by an independent method is always the most satisfactory mode of proof.

Practice. In teaching this rule also, the all-important matter is that the pupils shall understand the reasons for each step in the process and value of each line of figures which they obtain.

N.B.—There must be a sound drilling in "*Aliquot Parts*" before other work is attempted.

Illustrative Examples:—

1. 576 *at* $\frac{3}{4}$*d. each.*

q.		
576	=	value of 576 at 1 farthing each, *in farthings*
3		
4) 1,728	=	value of 576 at three farthings each, in *farthings*
12) 432	=	,, ,, ,, ,, *pence*
2,0) 3,6	=	,, ,, ,, ,, *shillings*

2. *649½ articles at £2 8 9½ each.*

We shall obtain the value of £2 8 9½ if we add the separate values at £2, 8 shillings, 6 pence, 3 pence, and 1 halfpenny; or if we add the values at £2, 6*s*. 8*d*., 1*s*. 8*d*., 5*d*., ½*d*., or if we break up the total sum £2 8 9½ into any other convenient amounts, and after finding the value of 649½ at each of these amounts, we add them together.

			£	s.	d.		£	s.	d.	
			£649			value of 649 articles at	£1	0	0	each
			2							
∴ 8*s*. is $\frac{1}{5}$ of £2	8*s*.	$\frac{1}{5}$	1298			value of 649 articles at	2	0	0	each
∴ 6*d*. is $\frac{1}{16}$ of 8*s*.	6*d*.	$\frac{1}{16}$	259	12	0	,, ,,		8	0	,,
∴ 3*d*. is $\frac{1}{2}$ of 6*d*.	3*d*.	$\frac{1}{2}$	16	4	6	,, ,,			6	,,
∴ ½*d*. is $\frac{1}{6}$ of 3*d*.	$\frac{1}{2}$	$\frac{1}{6}$	8	2	3	,, ,,			3	,,
			1	7	0½	,, ,,			½	,,
			1583	5	9½	value of 649 articles at	2	8	9½	,,
			1	4	4¾	,, ½ ,,	2	8	9½	,,
ANS.			£1584	10	2¼	value of 649½ articles at	2	8	9½	,,

The same sum should now be worked by using other aliquot parts, and both examples should appear on the board together. The teacher must see that in the early cases the parts are exactly contained in the dividend, or the uncalculated remainders will probably cause the answer in one case to be slightly different from that obtained in the other. If Addition of Vulgar Fractions has been previously taught, this difficulty will be obviated; or children may be required to carry out their division of the pence to three or four places of decimals.

Ratio, Proportion, and Rule of Three.

Ratio. (*a*) As usually understood, the ratio between two numbers shows *how many times* the one is greater than the other; or *how many times* the one contains the other or is contained by it. Thus the ratio between 1 and 5 is the same as that between 3 and 15, or between 7 and 35, &c.

(*b*) *Conventional modes of expressing Ratio.* Two are in common use. The ratio between 2 and 3 is expressed thus:—

$$\frac{2}{3} \quad \text{or} \quad 2 : 3$$

(*c*) *Ratio can only exist between quantities of the same denomination.* We can establish a ratio between 6 horses and 12 horses, or between 4 men and 13 men, &c.; but we cannot speak of the ratio between 6 horses and 12 cows, because the one cannot be contained in the other. Nor can we establish a ratio between 7 pence and 5 shillings, or between 2

cwt. and 3 tons as such; but we may speak of the ratio between 7 pence and 60 pence or that of between 2 cwt. and 60 cwt.

(*d*) *Define "Antecedent" and "Consequent."* Question the boys to see if you have been understood.

Proportion. (*a*) *Proportion is the equality of ratios.*—2 is one-half of 4, 3 is one-half of 6; $\frac{2}{4} = \frac{3}{6}$; the ratio between 2 and 4 is the same as that between 3 and 6;—the four numbers are in "proportion."

$$2 : 4 :: 3 : 6$$

(*b*) When four numbers are in proportion, *the product of the means is equal to the product of the extremes.*

Define the terms "*means*" and "*extremes*," and illustrate the truth of the dictum by an example.

2	:	4	::	3	:	6	(*i.e.*, $\frac{2}{4} = \frac{3}{6}$)	
2	:	3	::	4	:	6	(*i.e.*, $\frac{2}{3} = \frac{4}{6}$)	
4	:	2	::	6	:	3	(*i.e.*, $\frac{4}{2} = \frac{6}{3}$)	In every one of these
4	:	6	::	2	:	3	(*i.e.*, $\frac{4}{6} = \frac{2}{3}$)	cases, *the product of the*
6	:	4	::	3	:	2	(*i.e.*, $\frac{6}{4} = \frac{3}{2}$)	*means and of the ex-*
6	:	3	::	4	:	2	(*i.e.*, $\frac{6}{3} = \frac{4}{2}$)	*tremes* will be twelve.
3	:	2	::	6	:	4	(*i.e.*, $\frac{3}{2} = \frac{6}{4}$)	
3	:	6	::	2	:	4	(*i.e.*, $\frac{3}{6} = \frac{2}{4}$)	

(*c*) Therefore *it is possible to find any one term in a proportion, if the other three be given.*

(Draw the chalk through any of the terms in a complete proportion, and set the boys to find it, by using the remaining three numbers. Repeat this process until they can do so readily. Pay special attention to finding the fourth term, when the first, second, and third terms are given.)

(*d*) *If the antecedent in one of the ratios in a proportion be greater or less than its consequent, the antecedent in the second ratio will also be greater or less than its consequent.*

Show this after writing out a large number of complete proportions. (See *Euclid V., Def.* 5.)

Rule of Three. (*a*) *This is a special case of proportion, in which only three terms are given, and we are required to find the fourth.* In the terms which are given, we have the antecedent and consequent of one ratio, and the antecedent of the second ratio.

(*b*) *First determine which of the terms is this last antecedent.* (Apply (*c*) under ratio.) Set it down, and put x for its consequent.

(c) We have now two terms left, and we have to *determine which is to be the antecedent and which the consequent* in the ratio of which these terms are components. (Apply (*d*) under Proportion.) Consider whether x will be greater or less than its antecedent; if greater, put the greater of the terms in the other ratio for the consequent; if less, the lesser. Complete the proportion, leaving x for the fourth term.

(*d*) *See whether both the terms of the ratio which is known, are of the same denomination;* if not, reduce them to it. (See (*c*) under ratio.)

(*e*) *See whether the antecedent of the other ratio is in a convenient denomination or no;* if not, reduce it.

(*f*) *Find the fourth term*, and bring it to a convenient denomination. (See (*d*) under Proportion.)

The ordinary rule for "Rule of Three" may be formulated and committed to memory, after it has been illustrated and educed by means of several examples.

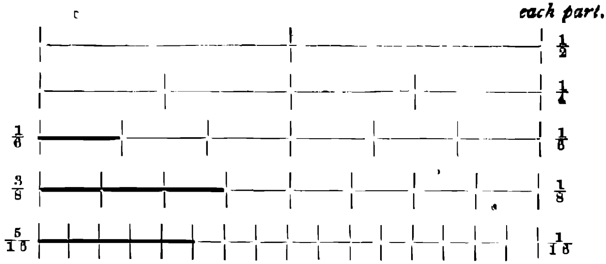
The young teacher ought to be able to construct such examples easily, after he has mastered the *reasons for the arrangement* here given. He is advised to pay special attention to this important rule, which under another, previously treated, is known as the Method of Unity.

N.B.—*Simple and Compound Interest*, *Percentages*, *Stocks*, *Discount*, *Partnership*, and other similar rules should be taught as cases of the "Rule of Three," and the reasons for any special method should be educed.

Vulgar Fractions. There is no reason why the easier cases of fractions should not be taken immediately after Simple Division. All the processes are simple, and most of them are capable of easy explanation. An indication of the use which may be made of the Multiplication Table has already been given in *Mental Arithmetic.*

(*a*) *Preliminary Mental Exercises* of the kind mentioned under Division should be given, as well as others in which concrete numbers are used. Useful questions may be easily made which have reference to money.

(*b*) *Explanation of terms*, "*Numerator*," "*Denominator*," "*Fraction*," &c. Show with apples and potatoes, by lines and by writing the fractions on the black-board, the value of $\frac{1}{8}$, $\frac{3}{8}$, $\frac{5}{18}$, &c.



(*c*) *Common Denominator.* 1. With lines show that $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{8}{16}$, &c. 2. Require the boys to express a given fraction in several different ways. 3. Require them to express two or more fractions with a *given* denominator common to them all. Easy examples at first. 4. Lead up to the rule, state, illustrate, and give exercises.

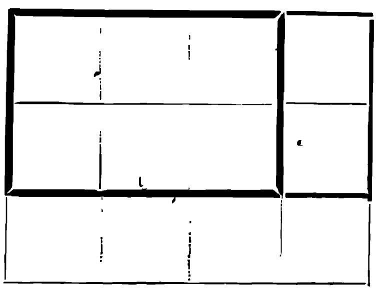
(*d*) *Addition and Subtraction.* 1. We cannot add or subtract integral quantities unless they are of the same kind; *e.g.*, 6 horses + 4 horses + 8 horses are 18 horses; but 6 shillings + 4 halfpence + eight farthings are not 18 shillings, or 18 halfpence, or 18 farthings.

2. So it is necessary to reduce fractions to the same name, "*to a common denominator*," before we can add or subtract them.

3. Apply (*c*) above, work illustrative examples, and give exercises.

(*e*) *Multiplication.** In multiplication of Vulgar Fractions we have to *find a fraction of a fraction.* Use simple diagrams to educe the rule.

e.g., *Find the value of* $\frac{3}{4}$ of $\frac{2}{3}$. Draw a rectangle whose sides are 4 and 3. Divide it into thirds by horizontal lines, and let boys get a clear idea as to what is meant by $\frac{2}{3}$ of the whole rectangle. Now divide the horizontal line into *fourths*, and draw vertical lines through the divisions.



We thus get the whole rectangle divided into equal twelfths, 6 of which

* We assume that boys know how to multiply an integer by a fraction (see Simple Division).

are contained in the part marked off by the lines which show $\frac{3}{4}$ of $\frac{2}{3}$ of the whole rectangle, *i.e.*, $\frac{3}{4} \times \frac{2}{3} = \frac{6}{12} = \frac{1}{2}$.

Other examples, in which other fractions are involved, should be taken, and the rule educed and stated.

Numerous exercises should then be given.

(*f*) *Division.* In dealing with whole numbers, the quotient is always less than the dividend ; in fractions this is not the case. Thoughtful boys often have a considerable difficulty here. They should be helped thus :—

Multiply 12 successively by 8, 4, 2, 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, and set down the answers.

Divide 32 successively by 16, 8, 4, 2, 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, &c., and set down the answers.

Bring under notice again that Division is a shortened process of Subtraction, and show that *the smaller the subtrahend, the greater the number of times it can be subtracted* from any given minuend.

2. *Divide a fraction by an integer*, and use a diagram similar to that employed in multiplication to explain the process ; *e.g.*, if $\frac{2}{3}$ be divided by 4, we obtain the same result as if we multiply $\frac{2}{3}$ by $\frac{1}{4}$, the quotient is $\frac{2}{12}$. This can be easily shown by a diagram. Give other examples.

3. *Divide a fraction by a fraction ; e.g.*, $\frac{3}{4} \div \frac{5}{7}$. From (2), if $\frac{3}{4}$ be divided by 5, the quotient is $\frac{3}{20}$.

But $\frac{5}{7}$ is one-seventh of 5.

∴ Any number contains $\frac{5}{7}$, seven times more than it contains 5 (*or* $\frac{5}{7}$ can be subtracted from any number, 7 times more than 5 can be subtracted from the same number).

∴ $\frac{5}{7}$ is contained $\frac{7 \times 3}{20}$ in $\frac{3}{4}$, or $\frac{3}{4} \div \frac{5}{7} = \frac{21}{20}$.

Apply similar reasoning to other examples, educe the rule, formulate it, and give exercises upon it.

If the fractions be brought to a common denominator, we divide one fraction by the other, if we find how many times (or parts of a time) the divisor is contained in the dividend.

$\frac{3}{4} \div \frac{2}{3}$ means, "How many times is $\frac{2}{3}$ contained in $\frac{3}{4}$?"

Or, "How many times is $\frac{8}{12}$ contained in $\frac{9}{12}$?"

Or, "How many times is 8 contained in 9?"

Answer $\frac{9}{8} = (\frac{3}{4} \times \frac{3}{2})$.

Decimals may be taught as soon as the child is perfect in operations with integers. If we can *enable children to grasp the principle of the decimal notation*, most of the ordinary operations with decimals become easy ; this we can do by a little extension of our lessons on the "*Device of place.*"

1. *Meaning of a decimal expression.* Numerate, and dwell on intrinsic and local value of figures in such examples as—

ten thousands	thousands	hundreds	tens	ones	.	*tenths*	*hundredths*	*thousandths*	*ten-thousandths*
3	3	3	3	3	.	3	3	3	3

2. *Operations.* (*a*) *Addition and Subtraction* can be shown as in Simple (and in Compound) rules; so also can (*b*) *Multiplication and Division by whole numbers.*

(*c*) *Multiplication and Division by decimals.* The rules for pointing, which present the only important difficulty, may be educed by multiplying (or dividing) a suitable number by 10, 100, 1,000,—10, 1, .1, .01, .001;—400, 40, 4, .4, .04, .004, successively, and noting the results. Having educed the rule, graduated examples must follow.

(*d*) Many cases of *Reduction of decimals* can be explained under (1); *e.g.*,

$$.9 \quad = \quad .90 \quad = \quad .900 \quad = \quad .9000, \quad \&c.$$

or 9 tenths, or 90 hundredths, or 900 thousandths, or 9000 ten thousandths, &c;

or $\frac{9}{10}$ or $\frac{90}{100}$ or $\frac{900}{1000}$ or $\frac{9000}{10000}$ &c.

Further, $.1 = \frac{1}{10}$; $.03 = \frac{3}{100}$; $.0106 = \frac{106}{10000}$. These, and similar expressions can be educed, if they are properly led up to.

Simple lessons on the Notation of Decimal Fractions should precede instruction in the principles of the Metric System. There is no need to delay the teaching of the principles late in school life.

After this, *the special method* by which decimal operations are performed should be shown. It will be easy for the teacher to explain the reasons for these operations if boys can work Vulgar Fractions, *and if they understand the meaning of a decimal expression.* This last point is that to which the teacher must first attend.

Examples. 1. *Bring $\frac{1}{8}$ to a decimal form.*

This means, find a fraction which shall be equivalent to $\frac{1}{8}$, but whose denominator shall be a power of 10.

But $\frac{5}{8} = \frac{50}{80} = \frac{500}{800} = \frac{5000}{8000} = \frac{50000}{80000}$, &c. (See *e* Vulgar Fractions), and our problem is to express this value in a fractional form, but with the denominator 10, or 100, or 1,000, or some other power of 10. It is evident that this may be done, if the numerator and denominator contain 8 an exact number of times, by dividing both numerator and denominator by 8.

$\frac{5000}{8000}$ is the lowest form that will suit our purpose, and this is equal to $\frac{625}{1000}$ or to .625.

Other examples should be given, the results left on the black-board, and the special rules for reducing a vulgar fraction to its equivalent decimal form should be deduced. Exercises should follow.

2 *Add together* 3.5, .62, *and* .008.

$$\left.\begin{aligned} 3.5 &= 3\tfrac{5}{10} \\ .62 &= \tfrac{62}{100} \\ .008 &= \tfrac{8}{1000} \end{aligned}\right\} \quad \begin{aligned} &\text{The total is } (3 + \tfrac{5}{10} + \tfrac{62}{100} + \tfrac{8}{1000} \\ &\text{or } (3 + \tfrac{500}{1000} + \tfrac{620}{1000} + \tfrac{8}{1000}) \\ &\text{or } (3 + \tfrac{1128}{1000}) \text{ or } (3 + 1 + \tfrac{128}{1000}) \\ &\text{or } 4\tfrac{128}{1000} \text{ or } 4.128 \end{aligned}$$

Now show the ordinary method, and show that in it we really calculate with the numerators of the above fractions, and allow the *position* of the figures to indicate their fractional value. (Connect this with advanced Lessons on Notation.

3. *Multiply* 4.7 *by* 9.12.

$$\begin{aligned} &i.e., \text{ multiply } 4\tfrac{7}{10} \text{ by } 9\tfrac{12}{100} \\ &\text{or } \tfrac{47}{10} \times \tfrac{912}{100} \\ &\text{this is } \frac{47 \times 912}{10 \times 100} \\ &\text{or } \frac{42,864}{1,000} \\ &\text{or } 42\tfrac{864}{1000} \\ &\text{or } 42.864 \end{aligned}$$

Now show the ordinary method, and connect it with the above, as in former cases.

By slight modifications of the plans here given, it is possible to teach all the ordinary operations of decimals.

N.B.—Use Decimals in working *Compound Interest*, and in all other cases where their employment will shorten or simplify the work. The *exact answer* to the following sum is found with ease thus :—

"*Find the amount of* £250 14*s*. 6*d*., for 4 years, at 3 %, C. I."

```
250. 725
  7. 52175
---------
258. 24675
  7. 7474025
---------
265. 9941525
  7. 979824575
---------
273. 973977075
  8. 21921931225
---------
282. 193196387725
  or £282 3s. 10¼d. .46853176
```

Teach boys the *rule for at once reducing ordinary money to a decimal form*, true to three places, and for bringing decimal money to its equivalent ordinary value. Results in Interest and Proportion are usually obtained readily in this way, and whenever the multiplier (or product of the multipliers) is not greatly in excess of the divisor (or product of the divisors), the answer, expressed in English money value, will be usually true.

Teaching Notes of a lesson on the **Metric System.**

Apparatus. *A box of weights and measures*, like that used in French elementary schools, with black-board and accessories, will suffice.

In default of this box, prepare *a lath one metre in length;* mark it off into *decimetres*, and let one of the decimetres at least be divided into *centimetres* and *millimetres*. (Other forms of the metre and its parts, a tape measure, and a jointed lath will be useful.)

A *cubic decimetre* (Litre), with one face marked off into square centimetres; a *hollow cube*, in stout cardboard, each internal face to be a square centimetre.

A *cubic centimetre* (for Gram) in wood; a *hollow cube* of this capacity; a *glass*, to exhibit water contained in cubic centimetre.

Scales and *weights*, one gram, one kilogram, a half kilogram, &c.

(*French coins;* franc, &c.)

Origin.

(1) Complexity of French weights and measures 100 years ago; desire to simplify.

(2) Evident advantage in facilitating intercourse between nations, if common system could be agreed upon.

Conference proposed 1790; some countries joined; England held aloof.

Requisites in good system.

(1) Suitable *standard of length*, from which other standards obtainable. Of *proposed standards* (*a*) length of pendulum, beating seconds, at sea level, at lat. 45°; (*b*) equatorial circumference of earth; (*c*) meridian circumference of earth; last was selected.

Mechain and Delambre measured meridian from Dunkirk to Barcelona; then calculated distance on meridian from equator to pole. $\frac{1}{10000000}$th of this distance was called a **Metre**, and was made the standard of length —adopted by representative committee of 20 from different countries.

(2) *Easy and regular multiples and submultiples of unit*,—easy to calculate with and remember. Secured by adopting a *decimal system*.

(3) *Systematic nomenclature*.

Tabular plan of Metric System. French Weights and Measures.

[*Note.* (*a*) Name of *Unit*, and its *origin*; four *prefixes* (Greek) *for multiples*; three *prefixes* (Latin) *for submultiples*.]

(*Let first lesson be on Metre, Litre, Gram, with their multiples and submultiples. Construct table and give exercises accordingly. The full table would come after the second or third lesson.*)

	Myrio- myria- (μυριοι) 10,000	Kilo- (χιλιοι) 1,000.	Hecto- (ἑκατον) 100.	Deca- (δεκα) 10.	1	Deci- (decem) $\frac{1}{10}$.	Centi- (centum) $\frac{1}{100}$.	Milli- (mille) $\frac{1}{1000}$.
Length.	Myria-metre.	Kilo-metre, (about $\frac{3}{5}$ mile).	Hecto-metre	Deca-metre.	*Metre* = $\frac{1}{40000000}$ meridian cir. of earth (= 39.3707904 inches, about 1 yd. $3\frac{1}{3}$ ins.)	Deci-metre.	Centi-metre.	Milli-metre.
Area. (1) Ordinary superficial measure.					(1) *Sq. Metre* (Centiare).	Squares	on units	of length.
(2) For Land.			Hectare, (about $2\frac{1}{2}$ acres).		(2) *Are*, square on line 10 metres long (about 120 sq. yds.)		Centiare (square metre).	
Capacity. (1) Ordinary both dry and liquid.	Myrio-litre (deca-stere).	Kilolitre, (abt. $27\frac{1}{2}$ bush. or 220 galls. Stere).	Hecto-litre (deci-stere)	Decalitre (centi-stere).	(1) *Litre* = volume of a cubic decimetre (about 61 c. in., or $1\frac{3}{4}$ pints).	Decilitre	Centilitre.	Millilitre (cubic centi-metre).
(2) For large masses.				Deca-stere	(2) *Stere* = volume of a cubic metre.	Decistere	Centi stere	
Weight.	Myria-gram.	Kilogram (about $2\frac{1}{5}$ lbs. avr.)	Hecto-gram.	Deca-gram.	*Gram* = weight of cubic centimetre distilled water, at its greatest density (about $15\frac{1}{2}$ grains).	Deci-gram.	Centi-gram.	Milli-gram
Money.					*Franc*, weight 5 grams, composition $\frac{9}{10}$ silver, $\frac{1}{10}$ copper (a little over $9\frac{1}{2}$d.)	Decime.	Centime.	

Exercises.

Repeating tables (say for Long Measure) on French and English systems. (*Set down numbers as they are given* (10, 10, 10, &c.—3, 12, 5½, 40, &c.); *call attention to relative simplicity of French system.*)

Addition, about 3 lines; (*French and English systems side by side.*)

Subtraction, easy Multiplication, and Division (*on same plan*)

Reduction, to equivalent values in another denomination, both ascending and descending; (*English by working out, French by merely shifting decimal point, after required denomination is settled.*)

(*Point out that relative simplicity is owing to the decimal system.*)

Employment. Scientific men generally. (*Calculations can be made readily, and carried to minute accuracy.*)

France, Holland, Belgium, Italy, Greece, Spain, Portugal, Germany (part), S. American States, United States use decimal system (and metric system), more or less.

Centigrade thermometer, levelling staff, Gunter's chain in land measuring. (*Show practical advantage by calculating areas of rectangular and triangular fields, and reducing to acres.*)

(*This section could not be taken in a first lesson.*)

GEOGRAPHY.

Reasons for Teaching Geography. (1) Its *utility as knowledge.*

A great amount of geographical knowledge is required for intelligent reading of newspapers and much common literature. The chief parts of the world are now brought into close connection. Newspapers are largely cosmopolitan, and we have the means of learning what is taking place throughout the civilized world soon after the events have occurred. The discoveries which are being made in regions hitherto unknown, or but partially explored, excite a natural and laudable curiosity. The labours of missionaries, the spread of emigration, and the facilities which are offered by steam and electricity have brought the remote parts of the globe closer together. On all these accounts a knowledge of Geography is desirable.

(2) Its value as *mental exercise and training.*

The matter of Geography lessons consists of an immense mass of facts, and useful information. Acquiring and storing these taxes *Memory*, and demands orderly, neat, and accurate mental arrangement. Choosing, arranging, and implanting facts well is the teacher's chief business in the geography lesson.

Side by side with this fundamental teaching, children should be trained in forming pictures for themselves of scenes, countries, cities, peoples, animals, vegetation, and other things which fall under treatment. "Picturing out" will help *Imagination*, and promote that realizing of description which should be an aim in all lessons on geography.

Association of various kinds has more scope in this subject than in most others; hence, if skilfully managed, geography lessons are always popular in school. The maps and diagrams which are used, the oral character of much of the teaching, the interesting knowledge which is given directly or gleaned incidentally during the lesson, and the comparative ease with which new facts are acquired and remembered, render geography a favourite study with boys, and an agreeable change after other school-work.

Aims of the Teacher of Geography. This subject, as treated in school, has two branches, "General" Geography, and "Physical" Geography.

The **General Geography** lesson of the elementary school deals essentially with facts. The teacher tries to give a knowledge of the topography of a country or a district, and to combine with it as many of the facts and principles of its Physical Geography, and of the details of its Political Geography as he can.

He has to teach these things in the first instance to children who know nothing about them, so that his teaching must in the main be *instructive*. His lessons will sometimes have almost exclusive reference to Physical Geography, and sometimes to Political Geography, but he may at times combine both. Some acquaintance with Physical Geography is necessary to the proper comprehension of Political Geography. In all his lessons he will use a map, and thus endeavour to give correct notions of topography. As his boys pass up the school, the early lessons are repeated in another form and amplified; thus the knowledge becomes fuller and more accurate. Such a knowledge of the general facts of Geography is of more practical utility in after life than an acquaintance with the principles of Physical Geography, if these be gained at the expense of the former.

Physical Geography is really a separate science, admitting to a large extent of scientific treatment in school.

The most important *facts* of this science, as it affects the world as a whole, and separate countries in particular, are given in the ordinary text-books on Geography, and the teacher who desires his pupils to learn these, should use the ordinary means of *instruction* to attain this end.

But scientific knowledge means an acquaintance with *principles and reasons* as well as with *facts*, and the teacher of a science must teach the facts and show their connection with the principles. He may do this in one of two ways; (1) he may state the principles first and show how they include the facts, or (2) he may begin with details, and by wise selection, arrangement, and experiment, show how general laws have been arrived at inductively from the observation of numerous particulars; in other words, he may ascend from facts to principles. This latter is the better method, *provided the teacher can use it.* Any science taught in this way may be made to furnish a valuable training in scientific modes of thought.

If Physical Geography be taught as a science in school, it should be illustrated as far as possible by physical experiments, and the observation and experience of the pupils should be appealed to continually. No science can be "crammed" into the learners.*

An ordinary Geography Lesson. In this the teacher *selects* his facts, *arranges* them in proper order, *associates* them with one another and with interesting *illustrations*, and *repeats* his instructions until he is satisfied that his pupils have learned what he wishes to teach. He *adapts* his lesson to his class.

Geographical text-books are valuable in so far as they present information in a readily accessible form, but this needs considerable modification before it can be presented to young children. The old ideas that geographical teaching necessitated the teaching of the exact heights of mountains, lengths of rivers, areas of countries, &c., are passing away. What is required are correct notions of the relative proportions of such estimates; comparison and contrast should be constantly used, and an endeavour made to point out resemblances and differences between the features of foreign countries and those of our own, which may be taken as fairly familiar to the class. Many of the most recently published text-books are based upon this principle.

The commonest mistake lies in teaching these isolated facts by rote, and taking a knowledge of these for a knowledge of Geography.

A teacher begins with the *coast* of a country, points out and names the *openings* on the East, South, West, and North, writes them on the black-board, and requires his boys to repeat them simultaneously until they are committed to memory. He then goes on to the *mountains, and lakes, and rivers*, and so on in turn, until he has taught all the facts he desires, and there his lesson ends. The boys have learned something of topography, and have committed a number of names to memory; but there has been no illustration, and no association of interesting matter with the bare details. It is not likely, therefore, that such a lesson will arouse the interest of the scholars as it is given, or that the facts with which they have been crammed will remain long in their minds after the lesson is over.

* It is desirable that the teacher should have some knowledge of *Experimental Physics*, and of *Physical Geology*, as well as of the ordinary *Physical Geography*, and so much *Elementary Astronomy* as is contained in the ordinary text books.

How then can we teach these details—for we must teach them—so that they may be learned with pleasure and be remembered also?

(I.) *Let us suppose that the teacher is about to give a lesson on the physical geography of "Surrey."* One proceeds on the plan we have just reprehended, taking the "*Boundaries*," "*Hills*," "*Rivers*," and so on to the end. Another not only *learns all these details, and arranges them in his own mind* before he comes into his class, *but thinks anxiously how he may best teach them*, and what interest he can throw into his lesson by arranging it in a special way, and what new matter he can connect with the facts, so as to fix both the facts and the new matter in connection on the minds of his pupils. Perhaps, after drawing an outline map in chalk upon the black-board, to be filled up as he goes on, he thinks that he will take the *railways* or perhaps the *rivers* that pass through the country as the basis of his lesson, and notice the character of the country through which these pass. Or he may proceed thus:—He assumes that he and his class are standing on the *Hog's Back*, the long chalk-down between *Guildford and Farnham*. He notices that the hill is composed of chalk, and is covered with short grass; that a similar range of chalk hills is continued to the East quite through the county;—that these and the connected hills in Kent and Hants form the *N. Downs*. He notices that to the south there is a lofty set of ridges composed of sand, and containing sandstone and ironstone; that in this ridge are the highest hills in Surrey, *Hindhead*, and *Leith Hill*;—that the principal peaks which can be seen are *Crooksbury Hill*, with its covering of firs, *St. Martha's Hill*, crowned with its church, and *Box-hill*, with its steep and box-covered sides, overlooking the town of *Dorking*, and the *Weald* and the river *Mole*;—that far away to the N.E. is *Richmond Hill*, and still further away and more to the East, the hills of Kent, on which we may see the Crystal Palace. He then calls attention to the extensive *plain* to the North, noticing that the soil is poor and covered with heath:—that *Aldershot Camp* lies away to the N.W., and that this heath land extends towards *Weybridge* and *Chertsey*. Then he notices the plain between the two ranges of hills, which is partly fertile, but a great part heath. The winding *river* near at hand is the *Wey*, which has worn itself a passage through the chalk at *Guildford*, whilst the *Mole* has cut a passage even more abrupt through the Downs near *Dorking*. Both these rivers run to the Thames, and turn the water-wheels of numerous mills as they flow. In this way he goes on until he has completed this part of his lesson, marking places on his sketch map as he proceeds. He now recapitulates, not exactly in the order in which he introduced his facts, but more in accordance with the plan on which the other teacher

gave the lesson. He obtains the "*Boundaries*," and "*Hills*," and "*Rivers*," and the rest, and writes them on the black-board under proper heads. Fuller details would come in subsequent lessons.

(2.) *The following lesson was given to a sixth class in a Victoria State School, soon after the war between Russia and Turkey had broken out in* 1877.

Having told the class that the lesson was to be on Turkey in Europe, the teacher desired the pupils to open their atlases at that country. Upon a large black-board he then rapidly, and with the utmost facility, sketched the outline of Turkey, and in a few moments had marked all the prominent physical features, taking care not to encumber the map and destroy its clearness by filling in minute details. The most important towns were then marked, including the principal fortified towns and fortresses on the Danube, and north of the Balkan mountains, and the three celebrated passes over the latter. After the class had been allowed sufficient time to make a rough sketch in their exercise books, and to compare it with the map of Turkey in their atlases, the teacher called for attention. He then gave a *résumé* of a very interesting article just published in the *Argus*, containing an account of the Turkish and Russian armies and navies, of the probable route the Russians would take in their march upon Constantinople, the resistance they would meet with at the Danube, and the difficulty of crossing the Trajan's Gate in the face of the strong fortress, Shumla. After this brief sketch, which did not last more than ten minutes, and which completely chained the children's attention, the teacher showed them a well-executed water-colour drawing of the Turkish flag and coat-of-arms. But now came the test as to whether the practical part of the lesson was really mastered. Every atlas was then closed, and with the blank map alone before them, the pupils were required to name every place pointed to on the board; this they did with the utmost readiness. To vary the lesson the teacher then named places, requiring full answers from the class. Thus: Varna? Seaport on Black Sea. Sophia? Strong fortress in Bulgaria. Rhodope Mountains? South of Turkey, trend N.W. and S.E. To guard against lazy pupils shirking their work—and there are always some inclined to do this in the best classes—the teacher selected individual pupils, and placing them before the board called upon their companions to endeavour to puzzle them with questions, which they were only too eager to do. In most cases they came out of the ordeal with flying colours, but there were one or two, however, who did not satisfy the teacher, and as a punishment for presumed inattention, and in order that they should not fall behind the rest of the class, they were required to bring on the following day a rough outline map with the places marked that they had failed to find or name. Although the amount of ground covered

by this lesson was considerable, the time occupied barely exceeded half-an-hour. I believe the above method, if properly carried out, would be found thoroughly successful. Its principal advantages are, (1) the great varieties capable of being introduced into the lesson, (2) the blank map containing absolutely nothing but what is required for the class under instruction, is consequently very clear, (3) and most important, all names being omitted, the pupils become familiar with the places from their position alone, and not from their names. When, however, the printed map is exclusively used, as it is in many schools, it is the names that the children look for, and which form their sole guide. Thus a teacher never can be certain that a lesson given in this way is really mastered.

The following extract from Mann's "*Educational Tour in Germany*" has been frequently quoted :—

"The teacher stood by the black-board with the chalk in his hand. After casting his eye over the class, to see that all were ready, he struck at the middle of the board : with a rapidity of hand which my eye could hardly follow, he made a series of those short divergent lines, or shadings, employed by map-engravers to represent a chain of mountains. He had scarcely turned an angle, or shot off a span, when the scholars began to cry out, 'Carpathian Mountains, Hungary; Black Forest Mountains, Wurtemburg; Giants' Mountains (Riesen-gebirge), Silesia; Central Mountains (Mittel-gebirge), Bohemia, &c.

"In less than a minute the ridge of that grand central elevation, which separates the waters that flow north-west into the German Ocean from those that flow north into the Baltic, and south-east into the Black Sea, was presented to view—executed almost as beautifully as an engraving. A dozen wrinkled strokes, made in the twinkling of an eye, represented the head waters of the great rivers which flow in different directions from that mountainous range; while the children, almost as eager and excited as though they had actually seen the torrents dashing down the mountain sides, cried out, 'Danube, Elbe, Vistula, Oder,' &c. The next moment I heard a succession of small strokes, or taps, so rapid as to be almost indistinguishable, and hardly had my eye time to discern a large number of dots made along the margins of the rivers, when the shout of 'Linz, Vienna, Prague, Dresden, Berlin,' &c., struck my ear. With a few more flourishes, the rivers flowed onwards towards their several terminations, and, by another succession of dots, new cities sprang up on their banks. Within ten minutes from the commencement of the lesson there stood upon the black-board a beautiful map of Germany, with its mountains, principal rivers, and cities, and the coast of the German Ocean, of the Baltic, and the Black Seas, and all so accurately proportioned that I

think only slight errors would have been found had it been subjected to the test of a scale of miles. A part of this time was taken up in correcting a few mistakes of the pupils, for the teacher's mind seemed to be in his ear as well as in his hand; and, notwithstanding the astonishing celerity of his movements, he detected erroneous answers, and turned round to correct them. Compare the effect of such a lesson as this, both as to the amount of the knowledge communicated, and the vividness, and of course the permanence, of the ideas obtained, with a lesson where the scholars look out a few names of places on a lifeless atlas, but never send their imaginations abroad over the earth; and where the teacher sits listlessly down before them to interrogate them from a book in which all the questions are printed at full length, to supersede, on his part, all necessity of knowledge."

It should be remarked (1) that Mann acknowledges this was a case of exceptional ability in a teacher; (2) that the narrative is intended to illustrate the advantage of being able to draw readily, as well as the desirability of using the black-board freely in Geographical lessons. (3) Such a lesson could only come as a recapitulation after children had been taught all the details they reproduced as their teacher proceeded.

Geography Lessons.

The foregoing sketches show the spirit in which Geography should be taught. They are not intended to be rigid models to be strictly followed.

I. To a Junior Class. *The object* here is to give children correct elementary ideas about Geography, to lead them on to familiarity with maps, and to understand what the markings upon them represent, to teach the meaning of geographical terms, and to impart as much sound and serviceable fundamental knowledge as is practicable. Try to *interest* rather than give much knowledge in detail.

Illustrations. (*a*) **Cardinal Points.** (Bearing in mind the general principles, "*Begin at home,*" "*Proceed from known to unknown,*" "*Appeal to observation,*" and the like, the teacher might go to work as follows.)

With known position of sun at noon (morning, evening), connect N. (S. E. W.) walls of room.—Draw a cross on floor or flat black-board, markings N. S. E. W.—Cause children to point to N., to touch S. wall, to face E. and W.—Have the street on N. side of school named, &c.—Ask the direction in which remarkable buildings or natural objects lie.

keeping at present only to N. E. S. W.—Vary and repeat these exercises until the actual direction of the cardinal points is well known.

Next deal with N.E., S.E., S.W., N.W., on the same plan, using floor or black-board to mark on, sending children to N.E. corner of room, &c. Minuter compass divisions had better come in higher classes.

The writer has seen the turnings in class drill used to teach direction, the children executing the movement at the word of command, and repeating simultaneously the direction in which they are looking, as soon as the movement is completed.

(*b*) **Meaning of a Map.** Several lessons will be needed; indeed, almost all the Geography in the early class may be more or less directly connected with this form of lesson. The lessons *may* be connected with those under (*a*) thus:—

Ground-plan of room. With black-board on floor, teacher calls on children to point to N. wall of room, and then requires a child to come out and trace the N. floor-line with a pointer. The teacher draws a line of suitable length, parallel to this N. floor-line, upon the black-board. He then asks children to point to the E., to show the E. floor-line, to point out where it must be drawn on the board, and how long it must be. After drawing it, the other lines in the ground-plan may be similarly dealt with. All this should be made sure of before going further.

The position of the gallery, the desks, the table, &c., should now be educed, their relative sizes estimated (half-across the room, one-quarter the length of the room, or similar approximations might do at first), and the objects then represented on the plan.

Now mark N. S. E. W. against the proper lines, and then put black-board on an easel, with N. uppermost. (This is sufficient for a lesson to beginners.)

Proceed next to a *plan of the school-premises and neighbourhood.* Recapitulate rapidly the chief points in the former lesson, using the old sketch. On the back of the board have a similar sketch ready, but drawn to a smaller scale; the internal fittings need not be shown. (If school buildings be extensive, have them drawn in block plan, marking the particular class-room specially.) Educe position, direction, and approximate distance of parts of school-fence, drawing lines on black-board accordingly. Mark position of gate, of pump, of big tree, &c., referring from time to time to N. S. E. W., N.W., &c. Go on next to roads and streets bounding the playground or near it, indicating their direction, carrying them as far as the board will allow, and marking positions of objects of interest.

A plan or map of the neighbourhood, taking in a wider area (say a radius of ten miles), could be introduced now. The teacher would show the position of the school on the plan, and would construct a simpler map on

the black-board, marking only a few of the leading features in the district such as the chief hills, and streams, and towns. Minuter details would properly come afterwards, if they were taken at all.

The transition to the map of the county, the country, and of the World could be easily managed now.

Some would prefer to begin with the map of the World, to *tell* the children what the various markings mean, and then explain and illustrate by referring to rivers, hills, &c., in the neighbourhood. This is a quicker method, but the other is more suited to the capabilities of children.

(*c*) **Terms and Definitions.** Try to give correct *ideas* first ; *names* and special words for the ideas properly come after ; a simple *definition* then serves to bind both together.

Note, that the child's ideas of lakes, mountains, rivers, plains, deserts, &c., will be based upon, and constructed from ideas derived from similar things about him. A pond, or even a pool in the playground after a shower, is a *lake* on a small scale ; the fragments of land near the edge of the pond serve for *islands* near the mainland ; the bed of a creek, or, in default of this, the course of a tiny water-stream across the school-yard, helps to show what a *river* is. Where actual lakes, islands, and rivers of respectable size can be referred to, the teacher has an advantage. Utilize all available natural objects in the neighbourhood.

Similarity and contrast should be abundantly used ; one lake is (four) times as large as another ; a strange river is (six) times as wide, or as long, as the river with which children are familiar, and so on. The black-board can be used to *show* what these statements mean.

Models, made of clay or sand, on a tray with a raised rim, so that it will hold water, can be used to illustrate all ordinary terms. Perspective *diagrams* and sketch *maps* of these models should be drawn on the black-board also. Excellent diagrams of this class, with corresponding maps on the same sheet, are published. Ordinary *maps* should then be introduced, on which similar things, islands, lakes, &c., are represented ; the map of the country will be the test to use. It will be well to give lessons on one or two terms at a time ; corresponding terms applied to land and water could be taken. The technical words should be kept out of sight until good general ideas of what they stand for had been formed. Examples and illustrations of all available kinds should be framed and used to make the idea clear. This being done, the definition should be given and be learnt by heart ; it should then be applied to the map.

The usual order will therefore be, model, picture, map, word, and other examples on map.

Here again, many teachers would prefer taking lessons on geographical nomenclature before general lessons on maps ; some also would try to combine the lessons.

(*d*) **Informal and General Geography.** Some lessons allow us to describe the districts where animals or objects are produced or found. *Word-pictures* of the country of the lion, the reindeer, the camel, the elephant, the kangaroo,—of the Negro, the Hindoo,—of the cotton-plant, the tea-plant, the sugar-cane, the date and the cocoa-nut palms, make a lesson interesting, and help children to lay up a good store of ideas. *Prints and coloured pictures* of scenery, or people at work, in their national dress, with their peculiar buildings, trees, birds, animals, &c., are of great use and value, not only in the lower classes, but quite through the school. The *Graphic*, *Illustrated London News*, and other periodicals will supply many such illustrations.

Maps should generally be used in these lessons; a globe might be occasionally employed.

The outcome would be, that children would have an elementary general notion about climate and its influence on animal and vegetable life, would know something of the continents, oceans, and broad distribution of land and water, and would have ideas about the Equator, the Poles, the form of the earth and its movement on its axis, besides the details mentioned in the former paragraph, and the acquaintance with terms and definitions dealt with before.

II. **To an intermediate Class.** The subject has to be taken up at the point to which it has been brought, and carried on further. Details will vary at different stages, but the following subjects should be dealt with by the time a boy reaches the fifth class.

General *notions about the surface* of the earth should be made tolerably exact and full. The *positions* of continents and oceans, countries and seas, chief mountains, rivers, lakes, and cities should be accurately known. *Ideas about climate, animals, plants, and people* of different districts should be more complete. The *size, form, and motions of the earth*, with such terms as equator, poles, axis, latitude, longitude, day, and year, should be taught and explained, at least in part. The *geography of the county or district, and of the country* should be known in fair detail, and the *continent* of which it forms part, or with which it is associated, should receive attention also.

This is a wide range; it will take time, and will be spread over at least two classes. *Lessons must be graduated, mapped out, and prepared* for children at the different stages, and *so worked in as to cover the ground*, and provide for due *repetition* and *thoroughness*. All the lessons must be repeated; the repetition will usually, but not always, come best after an interval, and in altered forms.

In dealing with the *geography of a country* in a fourth or higher class, the facts may be brought out in the following order. *Position* with respect to equator, and to best known countries; perhaps also the boundaries. *Describe the physical features* of the country, and notice their *influence* on climate, productions, commerce, character, and welfare of the inhabitants. Then enter into *detail;* the *coast*, with the capes, openings, and islands; the *surface*, with the mountains and plains, the rivers, lakes, deserts; the natural *productions*, animal, vegetable, and mineral. Next take up *political geography, connecting it as a consequence with physical geography as far as possible.* The position and names of *ports*, the localities of special *industries*, and the *towns* engaged in them, with the *reasons* for all this, should come. *Railways, canals*, political *divisions*, political *institutions*, and any *interesting points* affecting the character or peculiarities of the people, will be centres around which information can be clustered.

Names of places, mountains, &c., *must be learned.* To bring this about readily, the teacher will use maps and the black-board freely, and will require children to repeat orally, to write, to point out on the map, in their atlases, and on maps of their own drawing. He will try to form as many lines of association as he can, and to make the whole bundle of associations self-helpful, easily available, orderly, and complete.

But there is a higher stage; a good teacher of Geography goes beyond this. He *describes* as he mentions names, and tries to *gives correct geographical ideas* as well as words. To do this well, he must have a fair stock of general information, must know something about the places he attempts to describe over and above the usual text-book teachings, must have graphic power to some extent, *i.e.*, he must be able to "picture out" fairly well, and must understand the wants and capabilities of his scholars. Pictures, diagrams, and illustrative specimens can be usefully employed, and abundant appeal to familiar natural objects should be indulged in.

III. **To an advanced Class.** Teaching on the old lines will be continued, pushed further, and systematized more completely. Not only will fuller information be given, but the more scientific side of Geography will be brought to the front.

Ordinary Geography lessons will be dealt with on the same principles as in the intermediate classes, the teacher taking care to start with what his scholars know, to amplify their knowledge surely by proceeding slowly and safely, and generally, to suit his matter and method to the ability of his class. The Geography of the country (*England*) should be well known, and marked attention should be paid to the *Colonies* also.

Fresh ground will often be broken, and subjects, such as the following introduced, sometimes as illustrations, sometimes in special lessons :—

The *influence of the natural features* of a country on the welfare and character of the inhabitants. (*Illustrate* by Great Britain, Tartary, Hindostan, &c.) N.B.—Buckle connects the poverty of the Hindoos with the richness of the soil, and the ease with which their food—rice—can be grown.

Mountainous countries being inhabited by numerous *independent* states (*Illus.* Ancient Greece and Italy), whilst extensive *plains* have been *the seats of great empires* (*Illus.* Egypt, Assyria).

Islands and Mountainous Districts have been *the home of freedom* ; the sea and the mountains are bulwarks against invasion, and preservers of distinct national character (*Illus.* Britain, Switzerland).

Geographical Readers have been provided to supply information which shall render lessons in this subject more interesting. If these are carefully compiled from authentic sources, are well illustrated and provided with suitable maps, they are valuable aids, and are useful also as reading books. In all cases, however, they must be treated rather as indicating the lines upon which the subject is to be taught, than as supplying all the information necessary. To make the lessons really useful, and to claim the full interest of the children, the teacher should try to get the most recent information from such books as Whitaker's Almanac or Hazell's Annual Cyclopædia.

The *influence of an extensive sea-coast and a favourable climate* on commerce.

Ocean currents as affecting climate and trade.

Many points of *connection between Physical Geography and Astronomy, or with Geology*, can and should be brought in, such as :—

Motions of Earth ; time ; latitude and longitude ; ecliptic ; the seasons ; uses of globes.

Solar System ; moon ; eclipses ; tides ; ocean currents.

Volcanic Forces ; volcanoes and their distribution : earthquakes ; elevation and depression of land ; other phenomena.*

Action of Water ; currents ; ice (ice-cap, glaciers, and icebergs) ; rain ; denudation and degradation of land ; formation of deltas, &c.

* On this, and on similar subjects, teachers who have access to a good library should consult standard works. A few hours spent in studying

Huxley's "Physiography,"
Geikie's "Field Geology,"
Jukes' "Manual of Geology," edited by Geikie,

will give one new and enlarged ideas, besides furnishing whole sets of illustrations for use in higher classes.

Atmospheric Action; winds; weathering of rocks, &c.

Action of Vegetables and Animals; formation of peat and coal; coral reefs, &c.

Under *Commercial Geography,* the productions of different countries, their consequent exports and imports, the occupations of the people, the manufactures and their localities, the ports and chief towns, and the trade routes will be noticed.

Historical Geography fosters attention and gives pleasure. "*Lessons in Political Geography ought to be connected with History, and illustrated as much as possible by anecdote.* The great danger of this branch of geography is its tendency to degenerate into mere lifeless, thoughtless cram, or a mere repertory and catechism of unmeaning names. It is, for example, very difficult to make English children take an intelligent interest in the political geography of Ireland. But let the teacher who is to teach the geography of Ireland, read for this purpose such works as the account of the Irish campaign in the second volume of *Oliver Cromwell's Letters and Speeches* by Mr. Carlyle. Let him master the spirit and main outlines of the story, and then let him teach the political geography of Ireland by way of illustration of the story which he tells the children. So with the geography of any other country. India should be taught by reference to such stirring events as the life of Lord Clive and the Sepoy Mutiny; Spain by reference to the Peninsular War; Australia by unfolding the story of its gradual settlement and colonization; and all parts of England by reference to English history. Anything that will help the teacher to avoid mere statistics in the geography lessons, to disentangle the important from the unimportant details, and to throw a colour of human interest over the whole work, should be caught at and utilized."—*Fearon.*

Further general Hints on teaching Geography.

1. **Maps and Diagrams** are of the first importance. They appeal to the eye, so that the visual memory becomes an aid to acquirement.

Maps for ordinary class use should *not be crowded* with names, or they become indistinct. *Blank maps* are best for recapitulation, and it would be well for every school to have a proper supply of these. A successful teacher tells me that he makes "*skeleton* maps of almost everything."

Maps in Relief may be of service in a younger class, but as a rule the elevations are not sufficiently pronounced to make this kind of map available for class teaching. If the map be large, it is cumbrous and expensive.

Encourage scholars to have *Atlases* of their own, on which they may

follow the lesson at the teacher's direction, whilst he uses the school map.

Use the Map of the World at all times in all the classes. Boys are likely to form wrong ideas as to relative size unless this be done. In recapitulating, however, *examine the class without the map* at times.

If there be plenty of room, *the map may sometimes be laid on the floor* (care being taken to keep it clean and uninjured). It should be placed properly with reference to the cardinal points; then, if the boys stand around it, they obtain clearer notions of relative position.

The teacher should habitually *draw sketch maps on the black-board.* If these are filled in as the lesson proceeds, they become the best of all maps for teaching purposes. The boys may copy them on their slates if time allow.

The boys should be encouraged to draw maps. They may be made to take pride in these productions; map drawing then becomes a valuable means of teaching Geography, and of cultivating painstaking and taste.

Drawing maps from memory serves to teach and to test. If lines of latitude and longtitude are used, a little study enables one to make a respectable memory-map. Study, learn up, and draw the positions of Suez, C. Bon, C. Spartal, with some half-dozen more leading points, adding a little piece of coast line in each case; introduce others in the same way, and when enough have been brought in, join the points left unconnected. A little practice makes one expert. In the same way several places in Europe may be referred to lat. 60°, or near it, and so with other lines of latitude and longitude. Pupil teachers and students may find it worth while to have sets of lines drawn permanently in a book-slate for the continents and more important countries.

To draw (approximate) lines of latitude and longitude for Europe. Draw a horizontal line for the base; bisect it, and erect a perpendicular which is to do duty for long. 20° or 25° E. On this middle line set off convenient distances for lines of latitude at intervals of 5°. The 35° may touch the base line or not, at pleasure. Continue the marking up to what would be about 92° or 93°, and take this point (A) as a centre from which to sweep arcs through the marked points on the middle vertical line. Set off on the parallel of 60° distances equal to half the distance between one of the divisions on the vertical line. Draw lines from (A) through the divisions on the line of 60° latitude; these will represent lines of longitude. Cut off unnecessary lengths by a frame.

2. **A Globe** is a useful piece of apparatus in the Geography lesson. It enables the teacher to give his boys a better idea of

the relative sizes and positions of the parts of the world than can be gained from maps. But it is almost impossible to show details to a class from a globe. If used, it should be with Maps of the World at hand to refer to.

A slate globe is of service for marking the outlines of countries, &c., upon, in teaching a small class. The lines of latitude and longtitude should be permanently marked upon it.

A wooden ball, perforated to admit an axis (of bent iron fixed to a stand), and on which the Equator, and the tropical and polar circles are painted, is also very useful. If one-half of this ball be made black, it may serve as an illustration in lessons on the Seasons, on Day and Night, and on the Phases of the Moon.

The "*use of the globes*" was a prominent subject in Education until recent years. Many interesting problems can be worked, and much useful information obtained, by going through such a work as Keith's.

Used with maps of the World on different projections, the globe supplements the teaching, and helps greatly in forming correct ideas. Problems on latitude and longtitude, on differences in time between places, on the area where the sun is visible, on the places where the sun is rising and setting, where it is noon and midnight, on the seasons, on navigation, on great-circle sailing also, can be profitably introduced with maps and a globe. Actual distances should also be estimated, the scale shown on the map being also used for this purpose.

A *Mariner's Compass*, and a *Quadrant* or a *Sextant* are of occasional service.

The quadrant or sextant, if used fairly, and in conjunction with good diagrams, makes a lesson on latitude clear and interesting. Longitude would be taught by referring to time. An ingenious teacher can construct a model of a quadrant or sextant which will serve his purpose; a pocket-compass may be bought for a trifle.

The Meridian line of the school, if marked on the floor, may be made useful.

For example, lessons on longitude and on time may have an amusing as well as instructive element brought into them by using this line, and setting children now in it, now E. and now W. of it. The difference in time between places near the school could be brought out, by determining the absolute length represented by a degree of longitude at the place, and then noting distances E. and W. of the places required.

The *necessity* for lines of Latitude and Longtitude, and their *sufficiency* for determining the actual position of a place should be dwelt on. A good device here is to make a chalk dot on the black-board, not near the middle, and then ask children to describe its position,—this they can hardly ever do. Horizontal lines can now be drawn and numbered, starting from an "Equator," and vertical lines starting from a "first meridian;" the position of the dot can now be told.

Pictures, Illustrations, Specimens, should be collected and used in class teaching.

Many may be cut from illustrated periodicals; some of these, properly mounted, are *good ornaments* and *useful pieces of school furniture*, from which observant pupils will pick up much information.

Illustrated bills of tourist routes often contain useful pictures; many advertisements have illustrations which may serve.

Weather charts are capital helps; even *railway time-tables* may come in handy at times.

Specimens may cover a wide range, but they always arouse interest. The leaf of a "gum-tree" (Eucalyptus) would interest English boys in Australian forests, and then in Australia; an elephant's tooth could be a means of introducing the geography of Hindostan, or of Equatorial or Southern Africa, and so on

All these things should be arranged and carefully kept. Pictures might be preserved in a portfolio, those relating to different continents or countries being kept in separate folds of brown paper. Specimens require a special cabinet or cupboard, or a place of their own.

Such cupboards are usually spoken of as school museums. If their contents are kept clean and are arranged so as to admit of ready removal and replacement, when required to illustrate lessons, they are of great value. Mere curiosities, and sometimes objectionable specimens, are often brought by scholars as additions to the museum, and some tact is necessary in declining these gifts, in order to avoid hurting the feelings of these would-be donors. The best things to collect are those illustrative of processes in manufactures, of products in the vegetable, mineral, and animal world, and special specimens of particular interest. Thus a set of samples illustrative of the refining of sugar, ranging from a piece of sugar cane to a small bottle of lump sugar, specimens of different woods, a pair of Chinese "chop-sticks," or a distinct fossil will be found extremely useful.

Black-board. A good Geography lesson demands free use of the black-board.

Sketch maps, diagrams, sectional plans, lists of names arranged so as to favour ready learning, and a general sketch of the lesson should come in their places. Yet it is not uncommon to find the black-board scantily used, or not used at all, or else employed as a support or rest for the map.

Lessons *based on* **Railways,** *on* **Rivers,** *and on particular* **districts** are good means of teaching and recapitulating Geography.

Travels, Voyages, *and* **Narratives** *of Adventure* teach Geography pleasantly.

The teacher who has read the accounts given by Moffat, Livingstone, and Stanley, and who prepares suitable illustrations and maps, as well as other notes, is in a position to give a good set of *real* lessons on the Geography of Southern and Central Africa. The voyages of Columbus and Captain Cook would be equally interesting and instructive.

Teachers should make themselves familiar with the Geography of the neighbourhood, in order to enable them to draw their illustrations from natural objects close at hand.

A case was narrated to the writer, where an inspector asked an upper class what a volcano was, and received a correct answer. But when he asked whether they had ever seen anything connected with volcanoes, they were silent. Yet a remarkable extinct volcano was the most prominent feature in the landscape, and remains of old lava-streams, and patches of rich volcanic soil abounded in the neighbourhood. These children, by-the bye, were very fairly acquainted with the ordinary Geography of far-away countries.

Any interesting *historical events connected with the locality* should also be looked up, and be introduced with historical Geography.

Probably a good deal of interest and information is contained in *local names;* it will be very advantageous if the teacher can bring this out with certainty; guess-work, however, must not be indulged in.

Extract from the Instructions to H.M. Inspectors.

"Geographical teaching is sometimes too much restricted to the pointing out of places on a map, or to the learning by heart of definitions, statistics, or lists of proper names. Such details, if they form the staple of instruction, are very barren and uninteresting. Geography, if taught to good purpose, includes also a description of the physical aspects of the countries, and seeks to establish some associations between the names of places and those

historical, social, or industrial facts which alone make the names of places worth remembering."

"Attention should be called to the English Colonies and their productions, government, and resources, and to those climatic and other conditions which render our distant possessions suitable fields for emigration and for honourable enterprise."

HISTORY.

Reasons for teaching History. (1) *Its value as knowledge.*

There is *pleasure* in tracing and knowing the developments which have brought about the existing condition of things.

Apart from its enjoyableness to the individual, such knowledge is calculated to make a man a *better citizen.*

As with Geography, some acquaintance with History is assumed in current literature. References and allusions are made, and facts appealed to in illustration, which make some knowledge of History *necessary for intelligent reading* of newspapers and books.

(2) Its value as *mental exercise* and *training.*

History is pre-eminently the subject which seizes the *Imagination.* Well-told story always charms, and a teacher gifted with good descriptive power, well-up in his subject, and able to choose and adapt his matter, can always make a History lesson attractive.

It affords opportunities for *tracing the sequence of cause and effect*, for following the operations of a cause through a series of years. Illustrations of this fact increase in number according as the teacher is thoughtful and well-read. We would seriously advise young teachers to look for this as they read, and to make it a very prominent point in their history lessons. Every event has a cause; search it out if you can. This, however, is not to be overdone; mistakes, too, are very easily made.

Frequent appeals can be made to high principles, and to the nobler instincts of the pupils; the history lesson may thus become a great means of moral training. The right-minded teacher has the opportunity of inculcating a righteous indignation at wrong-doing, a detestation of meanness, and a love for what is noble in intention and in act. He may show that the truly great man is animated by an earnest purpose, that he is willing to make any sacrifices, and to endure any amount of suffering for what he honestly believes to be right. He can point out that something more than *intention* is necessary to a noble career, that *action* is wanted, "that no man (and no nation) ever becomes truly great in his sleep."—*Carlyle.* He can teach that wrong-doing on the part of an individual or of a people

is well-nigh certain to produce evil results in the end, that "righteousness exalteth a nation, but sin is a reproach to any people." In fact, history is full of teachings of this character for those who can find them.

Memory exercise ranges from easily-remembered incident to the difficult or severe taxing involved in storing and reproducing dates.

The Teacher's aim in History should be to give his pupils an insight into the condition of their country at different times, to give them a broad general acquaintance with the main facts in its story, to fix the order or time at which these occurred, and then to fill in as many useful or interesting details as possible.

The chief epochs should be selected, and be made the subjects of separate lessons, in which the aim should be to give correct general notions, rather than to teach multitudinous isolated facts; we should proceed here "from generals to particulars,"—"from the whole to the parts."

With junior classes, the lessons should have a story-telling character, so far as the teacher can give it. Seize on incident; give narratives about leading men; make much of peculiarities; "picture out." Help the children to form relative notions about the time when the events took place. Amplify and modify the lessons when they are given again.

An ordinary History Lesson to intermediate and advanced classes would usually proceed much as follows.

1. *The teacher must make suitable preparation*, by carefully mastering the detailed history of the period, not only as far as he expects his scholars to go, but much further, so that he may be able to give such additional information as is desirable. He has also to *consider how he may teach his subject*, and must make his arrangements accordingly.

2. When he has satisfied himself as to the pupils' knowledge of the previous lesson, *he will teach those other points which he has specially prepared*, and will endeavour, by proper *selection*, careful *arrangement*, suitable *illustration*, and due *repetition*, to amplify, methodize, and fix the knowledge which his pupils have acquired. In this he will bear in mind the "Reasons for teaching History"; he will do all that he can to connect facts and reasons, and to inculcate high principles, as well as to teach facts and arrive at generalizations.

3. He may *require his boys to write an abstract* of the whole lesson, or to answer in writing questions upon various parts of it. This is a suitable exercise for next day's home lesson. The scheme of the lesson which has appeared on the black-board can be used by the scholars in drawing up their abstract.

Illustration of "Teaching Notes" for a Lesson on the reign of Henry III., suited to a fairly advanced class.

1. *Condition of the Country and Regency of Pembroke.*
   1215-6. Louis, the Dauphin (afterwards L. IX.—"St. Louis"), at the head of a party of barons.
   1217. Defeat of L. at "Fair of Lincoln."
   1219. Death of Pembroke.

2. *Hub. de Burgh and Peter des Roches*—rivals.

3. *Confirmation of the Magna Charta.* 1225.
   Original now on view at Brit. Mus. Repeated confirmation in old times. M. C. appealed to as a standard.

4. *Abortive Invasion of France.*
   1242. Defeat of Henry at Taillebourg.

5. "*Mad Parliament.*" 1258.
   Bad government of Henry.
   Barons very powerful, king only "*primus inter pares*" (first among his equals).
   S. de Montfort at head of confederates.
   "*Provisions of Oxford.*"—Freeholders to choose four knights to state their grievances. Limitations on king's authority.

6. *Barons' War.* 1264.
   Henry tries to recover his power by force.
   De Montfort and barons resort to arms.
   1264. Battle of Lewes—defeat and capture of Henry—"Mise of Lewes"—Prince Edward a hostage.

7. *First Parliament.* 1265.
   De Montfort, partly through fear of his fellow barons, partly perhaps through good will for the people, calls representatives from cities and boroughs.
   Thus, weakness of Henry leads to introduction of parliamentary representation.

8. *Battle of Evesham.* 1265.
   Prince Edward escapes and gathers army.
   1265. De Montfort slain.

9. *Edward goes to Crusades.* 1270.
   Takes with him turbulent barons, and thus relieves the country whilst he attaches them to himself by common danger.

10. *Death of Henry*, 1272. *Character.*

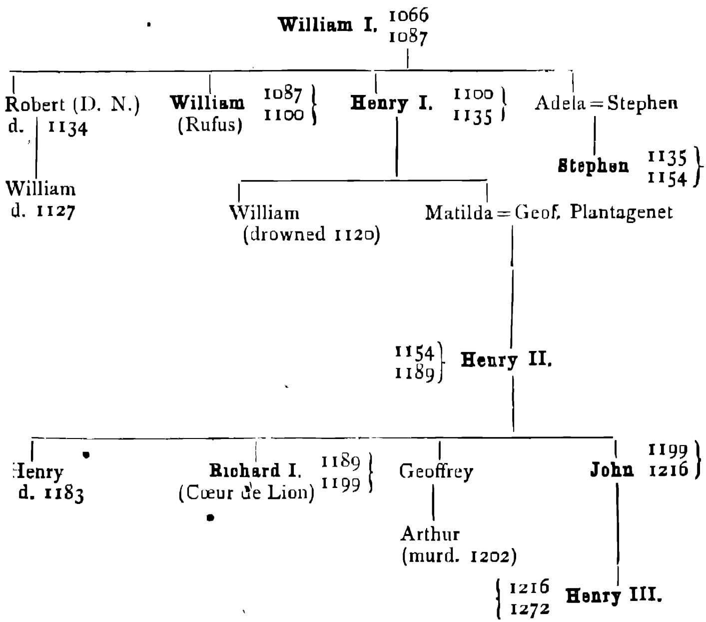
Weak rather than positively wicked. Vacillating. Promising readily, not keeping promise. Weak government always productive of evil.

11. *Turbulent Nobles.*

People rising in importance.
First parliament a great step.

GENEALOGICAL TREE.

Tracing Henry III. back to William I.



For a lower Class, which has gone through the historical course recommended before, it will be sufficient to take :—

1. Regency of Pembroke, and defeat of Louis.
2. Bad government of Henry causes Barons to combine,—"Provisions of Oxford."
3. Barons' War,—Lewes, 1264. Evesham, 1265.
4. First Parliament, 1265.
5. Prince Edward a Crusader.
6. Character of Henry, and condition of the people.

Chronology has been styled "the right eye of History." "*Dates are to the study of history what the multiplication table is to arithmetic.* They are the essential frame-work on which to build up and keep sustained all the scholar's historical learning. And dates, like the multiplication table, should be acquired in childhood, while the memory is still vigorous and retentive."—*Fearon.*

Unless this department of History receive considerable attention, the most hopeless confusion is likely to ensue. Even from the first, the pupils should be required to pay attention to the *chief* dates, and this exercise should become more and more detailed as their historical knowledge advances. Some recommend the use of peculiar key words and rhymes as aids for remembering dates: it is doubtful whether these give any real help. The time and trouble spent in learning them would suffice for the learning of the actual dates themselves. The writer has found it best to teach about a dozen of the leading events, to connect dates with them, and have these carefully committed to memory and *frequently repeated*, so as to keep them constantly fresh in the mind. The intermediate dates may be connected with the sovereigns who were reigning, the dates of whose accession and death should be learned and repeated frequently. Or the dates of events of secondary and of third-rate importance may be collected into tables, and then be committed to memory.*

Date tables include the following :—

The chief epochs in English history.

The sovereigns of England in families.

The chief battles under the Plantagenets, in the Wars of Roses, in the Civil Wars, in the War of the Spanish Succession, in the American War, and in the Peninsular War.

The chief legal enactments.

* Fitch speaks of a successful teacher, who had the leading events printed on cards with dates, arranging the events in three classes according to their importance, by employing different type.

Apart from the actual value of this knowledge in itself, such lessons provide a useful exercise for the *memory*. We ought to make acquirement as easy as we can for our boys, but we must get them to use their faculties for themselves, and "learning by heart" is a good means of educating the memory. *Historical tables must be repeated frequently;* but it must always be borne in mind that they are a means to an end, and that bare lists of dates do not constitute in themselves a knowledge of History.

Biography is a useful means of imparting historical knowledge in a pleasant way.

This method of instruction has not received the attention it deserves and yet *it would be possible and frequently profitable to teach the history of a period in a series of biographical lessons* on the great men of the period. For example, the history of George the Third's reign might be well taught in a series of lessons on the elder Pitt, Washington, Napoleon, Nelson, and Wellington, and the teacher would have the advantage of being able to excite the interest of the boys by recounting the instances of personal adventure in which the heroes of the lesson were engaged. In the same way, the biographies of Drake, Raleigh, Spenser, and others would give a better notion of the state of Europe, the Spaniards, America, Ireland, and the condition and spirit of the English in Elizabeth's time, than is obtainable from school history books.

Lessons of this kind give a *human interest* to History lessons, which is often wanting. The *usefulness* of the lessons will be increased too, if we show how the great men of the past used their gifts and their opportunities, how tenacious of purpose they were, and how they persevered gallantly against opposition until they won. Thrilling narrative, stirring the nobler emotions, making boys proud of their forefathers, and arousing *patriotism*, is possible in this connection.

Miscellaneous Hints.

1. *The teacher's own reading ought to be much wider than the class programme.*

All whose business it is to teach English History in elementary schools will have their ideas enlarged, and will be better teachers, if they know something of the History of *Greece*, *Rome*, and *Modern Europe*. They should also avail themselves of any opportunity for reading comprehensive standard works, like those of May, Green, Freeman, Macaulay, Froude, Hallam, and others.

2. The most natural and *the best general plan in teaching* and in learning *History* is :—

(*a*) Select *a few of the great epochs*, and deal with these first, as fully as is consistent with your general scheme. Try to *represent things as they were* at the time; give the children correct notions about the state of the country and of the people. *Make much of Biography*, especially with lower and intermediate classes; cause the master-men of the time to stand out prominently. Fix *dates* carefully.

(*b*) *Group other events around these*; refer secondary events to the main epochs as their primaries.

(*c*) *Fill in intermediate details afterwards*, as occasion demands or allows.

N.B. Dates must be memorized as we go, in connection with leading men and main facts. Without this framework History soon becomes confusion.

Subordinate groupings of events. After the main and secondary epochs have been dealt with, a good *practical* plan is to take the reigns of individual sovereigns in more or less detail.

If *a list of two or three of the chief events in the reign of each sovereign* be made out, connected with the proper dates, and *committed to memory*, a complete synopsis of English History is provided. Teachers should do this for their scholars and for themselves. This skeleton, however, ought not to be considered as an adequate knowledge, but the teacher and his pupils should be able to give an intelligent account of the events noted.

If our pupils have such a list compactly made, and so stored as to be ready to hand,—and if, further, they are able to construct a correct narrative out of these isolated materials, and to show in addition that they know what the country and the people were like at the time, we may congratulate ourselves on having really taught them something of History.

Genealogical tables, so drawn up as to show the relationship of the various members of the Royal family, and their claims to the throne, should be written on the black-board, and copied by the boys. Dates should be entered also.

These serve for recapitulation, as well as for introducing a new class of facts. Teachers should use them in their lessons, as well as in their private studies and their own examinations.

3. *Aim at giving your pupils such a knowledge of history*

*shall enable them to discharge their duties as citizens in an intelligent way.**

A sympathetic recital of the story of old heroes who suffered for conscience' sake, and who bought our liberties at great cost to themselves, will do much to lead our pupils to set a proper value on their privileges as Englishmen. The long struggle between the powers in the state, the sovereign, the barons, the clergy, the people, and the steps by which our noble constitution has been arrived at, should receive careful elucidation. Boys who have been thoroughly indoctrinated with such matters are not likely to set a light value upon their rights or to part with them easily.

4. *Do not confine historical lessons to wars only.* Let the *condition of the people* at the time be the primary point in your lessons.

An attempt should be made to picture out the life of an ordinary citizen in the various periods dealt with. More especially the gradual spread of comfort and the increasing amelioration of the lot of the humblest classes should be carefully shewn as the result of steady progress in legislation and education. The effects of a true and ennobling religion, of a constant and persevering struggle for political liberty, and the consequent progress of the constitution, from its birth to its present form should receive attention. The lives of great men are worthy of study, not only from the personal interest they excite as individuals, and the stimulus they give by their example, but also from the fact that they serve as landmarks in chronology by which contemporary events are easily remembered and recalled. An Alternative Course of History is now provided in the Code, which is largely based upon biographies.

5. *Make use of events, persons, and places connected with the neighbourhood* of the school in the history lessons; give them a local interest.

6. *Connect the teaching of History and Geography as far as possible.*

* Fitch would take a preliminary course of lessons, "with a view to make some simple and fundamental historical ideas intelligible—a *State*, a *nation*, a *dynasty*, a *monarch*, a *parliament*, *legislation*, the *administration of justice*, *taxes*, *civil and foreign war*. Scholars would thus see what sort of matter History had to do with, and would be prepared to enter on the study with more interest." (*Lectures on Teaching*.)

Use a map in History lessons; draw sketches of places on the blackboard. An interesting lesson on "*The Battle of Waterloo*," might be made by showing the positions and objects of the contending armies during the three days, June 16th, 17th, and 18th, 1815. The introduction of *pictures* of costumes, people, and places, as well as of *plans* and *maps*, is a good feature in many modern school histories.

7. *Historical poems, extracts,* and *allusions* may often be used with good effect.

The old ballad, "*Chevy Chase*," for example, may be used as an illustration of the normal state of feud, which used to exist between the chieftains on the English and Scotch border. Milton's sonnet to Cromwell would serve in part for a recapitulation to a lesson on the Civil Wars, and would do something towards showing the earnest spirit which animated the men of that time. Andrew Marvell's lines on the execution of Charles I. manifest the admiration which was extorted even from the political opponents of that monarch by his noble bearing at the last. So also several of Wordsworth's sonnets breathe the hopes and fears of the nation during the wars with Napoleon.

The writers just mentioned lived during the events which inspired their muse. Many others have written of transactions purely historical, but they succeed in throwing a new interest into the events they describe, by the vigour of their language and the charm of their style; the teacher ought to avail himself of the aid they give. Aytoun and Macaulay may be cited as writers of this class, and "*The Execution of Montrose*" and "*The Spanish Armada*" as examples of the poems which may be used. Shakespeare's historical plays contain much true history, and will be useful reading to pupil teachers on this ground alone

Extracts from the *Anglo-Saxon Chronicle* (Specimens of Early English, Clarendon Press), Defoe's "*Journal of the Plague Year*," Scott's "*Waverley*" or "*Ivanhoe*," Kingsley's "*Hereward*" or "*Westward Ho*," and even Marryat's "*Peter Simple*," would make fine pieces for reading to boys, after the teacher had prepared them, and noted what to leave out. Our literature is rich in examples of this kind.

8. *That boys may arrange their written answers* to a question on an historical event properly, it is well to use some scheme like the following:—

1. Causes	(*a*) Remote. (*b*) Immediate.
2. History.	
3. Results	(*a*) Immediate. (*b*) Remote.

9. *Pupil teachers should accustom themselves and their scholars to answer questions on paper.* It is sometimes a want of practice rather than a want of knowledge which prevents them from making satisfactory answers in their examinations.

The following points should be carefully mastered.

The Roman, Saxon, Danish, and Norman invasions, with their consequences.

The conquest of Ireland and of Wales.

The Scotch and French wars of the Plantagenets.

The claims of various of our sovereigns to possessions in France, and the provinces actually held by them at different times.

The Wars of the Roses.

The Reformation and the Revival of Learning in Europe.

The Civil Wars.

The growth of our Colonial Empire.

The French Revolution.

Social Reforms and Legislation of the Present Century.

They should also accustom themselves to answer such questions, as "Compare the actions and character of Marlborough and Wellington." "Institute a comparison between Pitt and Fox." A proper answer can only be given in these cases, after extensive reading and actual thought on the part of the respondent; *i.e.*, he must have gone through the processes which make historical reading valuable. A "general knowledge of history," as this is frequently understood, is insufficient for the purposes of the teacher, and will not enable him to pass his examinations with credit. Genealogical tables and details, as well as broad generalizations and leading facts, should be found in the answers to questions on history.

10. *The rights and duties of the Citizen.* Special attention is now directed to this offshoot of historical teaching, and the teaching of the rights and duties of the citizen almost forms a separate subject.

Several excellent reading and text-books for this purpose are within reach of the elementary school, and if the subject cannot be given the attention it deserves in special lessons, it should be taught, as far as possible, by the addition of such books to the list of ordinary readers of the school. They may be most suitably included among the "unseen" readers for the upper Standards. It is to be reasonably expected that practically all the boys in our schools will sometime or other become electors, and as such will wield no small power. They should be early

indoctrinated in the principles involved, as these are of increasing importance in these days, when the gradual lowering of the franchise and the increase of local governing bodies render every man a responsible unit in the state.

The keynote of the teaching will be the duties which fall upon us, to be accomplished even at some little sacrifice, through living in a highly organized and well regulated community.

GRAMMAR.

Its Province and Utility. Two functions, which may be regarded as distinct, and which may to a great degree be kept distinct, are involved in the ordinary use of the term.

In one case English Grammar is regarded as "*the Art of speaking and writing the English language with propriety;*" in the other, Grammar is treated as "*the Science of words.*"

I. **Grammar as an Art** deals with *using* words in speaking and in writing.

This is the practical side of the subject, that which concerns us in our intercourse with our fellows. It consists in *the correct use of suitable words to express our ideas in our mother tongue.*

Being an **Art**, it is *learned by doing or practice*, under suitable teaching and supervision.

The Teacher's Aim is to furnish his pupils with a *good stock of words*, to teach what *their powers* are, and to cultivate *taste and skill in using them.*

Note that the means usually employed in school for this purpose, or the exercises intended to give facility in it, do not fall under the ordinary meaning of Grammar. Teachers do well to keep the distinction before themselves, if they recognize the chief objects to be served by each form of lesson.

Observe also, that in laying up a good store of words, pupils are accumulating the very materials which will be helpful in formal Grammar.

The chief means of reaching it.

(1) **The Reading Lesson.** There should be *much reading* of good extracts from standard authors; these should be well explained, and well rendered.

Where such lessons are successfully given, a *desire for further reading* and then a *taste for literature* is aroused; this is a safe guarantee for

progress. An *increased vocabulary* follows, and this supplies the reader with additional material, words, for thinking with. The *uses of words* are learned, and the *style* cultivated, *i.e.*, there is increased aptitude and refinement in using words, which also carries with it higher possibilities in thinking.

Some approach to **critical examination** of a suitable literary work may be attempted with elder scholars, and certainly with pupil teachers.

Memorising, followed by spirited **Recitation**, adds to the stock of words and of ideas, and helps to cultivate the taste. To a degree also, **Transcription** and **Dictation** serve the same purposes.

(2) **Special Practice** with words that children know, training them to express their ideas tersely and exactly, as well as fully and suitably.

Oral answers, in the form of complete sentences, are recommended.

Written answers serve even better for some reasons; the children can think more completely, and can attend more closely to style and finish. Teachers scarcely need reminding that average children will do no more and no better than they are obliged, it will therefore be necessary to keep up a constant pressure here; for making good answers in either form requires thought.

Written answers may commence with simple *lists* of things in the room, in the garden, &c, then short *sentences*, which may pass on to *Abstracts* of Lessons, *Synopses* and *Précis* writing applied to extracts, *Letters*, and original *Essays*. Exercises of this character must be *prepared for;* learners will require guidance and teaching; they must be *shown* how to write a letter, to make a précis, &c., before being set to do it. On the same principle, they should be taught to single out and arrange the leading points in a lesson, or a selection from a book or newspaper, before they are asked to make an abstract; the *black-board* used so as to show systematic sketches, supplies good lessons of this kind. Teaching composition requires a good deal of patient skill. Further, written answers cannot be asked for, until the pupils have acquired a fair stock of words.

Paraphrasing, or rendering the meaning in our own words, is in a sense the analogue of translating from one language to another, but admits of greater freedom in expression and variety in structure. This is a useful, though generally a thankless exercise, except with advanced scholars and pupil teachers.

Formal Lessons on Grammar, Syntax, and Logical Analysis help the pupil to understand the structure of sentences, furnish him with rules for regulating his speaking and writing, and teach him what forms are allowable; on these accounts, considerable attention should be paid to

these lessons. *Exercises* based on them will reinforce and fix them. Such lessons, however, are not so influential in giving power to use words well as actual practice in well-using them; they are likely to be *dry* also. Grammar is not so helpful as many imagine towards correct and ready speaking and writing.

The idea prevails with many people, that Grammar is merely a contrivance for regulating speech, or in other words, that correct language depends upon Grammar. This inverts the order; the Grammar of a language can only be made from a study of the language itself, the Grammar follows the language, and alters as the language alters. The Grammar of modern English is very different from that of the English of Edward the Third's reign. In fact, the language rules the Grammar, although grammatical rules, after they are acknowledged, tend to perpetuate the specialities to which they refer.

(3) **Habitually correct language** in school.

The words we commonly hear, the forms of speech with which we are most familiar, the conversation of companions, and the talk at home, are powerful in determining the words we use, and our mode of using them.

If children came in contact with none but good forms of language, the difficulty with the *practical* side of the mother-tongue would be trifling. Children in educated homes learn to use words correctly without conscious painstaking.

Habitually *correct language by teachers* sets a pattern which pupils come to imitate in time.

Mistakes must be watched for, and always *carefully corrected.*

Conversation, which would be the best of all forms of practice, is scarcely available in modern elementary schools.

(4) **Other less formal means** can be used sometimes.

New words are employed in *Collective Lessons*, usually in such a way as to make their meaning clear, and enable the pupils to use them afterwards independently. Lessons on *Etymology*, and on the history and powers of words are other means of emphasizing them for children. Possibly room might be found for a few lessons in *Rhetoric;* these, if taken, would connect themselves most naturally with Recitation. Occasional *Reading by the Teacher* from interesting books introduces matter and words, and gives opportunity for explanation.

II. **Grammar as a Science**, or as the Science of Words.

Its Utility. The systematic study of Language affords a form of mental culture not to be obtained from any other study. It

has therefore always occupied a prominent place in a liberal education.

At our Universities, until comparatively recent times, the ordinary course of study seems to have been limited almost exclusively to *Mathematics*, and to the "*Humanities*." The one includes all the sciences which pertain to magnitude and number, "the exact sciences;" the other includes Grammar (Latin, Greek), Rhetoric, Poetry, studies which were considered to have an exceptional power in "*humanizing*" and *polishing* the student. The prominence that has been given to the subject in the education of boys from the time of the Tudors downwards is well known, and is indicated by the name given to so many educational establishments, "*Grammar* schools."

There is no doubt that as a study, it tends to *foster clearness and precision* of thought; it is consequently spoken of as "*the Logic of Elementary Schools*." *Words are the vehicle for the expression of thoughts*, and the accuracy and completeness with which we can succeed in imparting our thoughts to others will depend upon the words we use and the mode in which we use them. Further, *connected thought itself requires the mental employment of words;* our thoughts cannot be laid hold of and appropriated until they are put into words. If then, words be the *instruments* of thought, and the *means for the expression of thought*, it is fair to conclude that the more we know of words, and the more fully we can command them, the better shall we be able to think, and the better able to express ourselves. Any study also which increases our familiarity with words, increases our ability to think, and our ability to communicate our thoughts to others.

Its difficulty. Progress depends upon ability to discriminate and apprehend mental distinctions. The learner is compelled to *think* when learning, and when answering questions; the exercise is also one of *pure* thought; *mental distinctions* are dealt with, and not tangible objects. "*It is all pure mental work from the beginning;*" memory alone is of little use.

In an ordinary Parsing lesson, for example, each fact given about a word requires a separate mental effort from the pupil. It is not to be wondered at, that such an exercise should be unpopular with weak thinkers, and with those who do not like the trouble of thinking. But it is in *making learners think*, and in training abstract thought, mental concentration, and judgment, that the great value of Grammar lies. Teachers who recognize this will try to make Grammar lessons supply this training, and will lay themselves out to arouse and maintain the peculiar attention the subject demands.

Since Grammar demands abstract thought, which young children cannot give, *Grammar* lessons *should not be begun too early*, nor be pushed on too rapidly.

Abstract thinking is seldom if ever liked amongst children, even when they are capable of it. But remembering its value as a training agent, *reasonable pressure* should be used, taking care, however, not to ask too much. It is the aim of a good teacher to cause his scholars to *take pleasure in thinking.*

Grammar lessons are made easier, and an element of the *objective and concrete* is introduced when the black-board is freely used, when children *see* words and sentences before them, and plenty of examples are employed.

General Method in Grammar Lessons. Either or both of the two ordinary plans may be used; the *Deductive*, representing only part of the full mind process, enables us to cover more ground in a given time; the *Inductive* may be made to yield the more complete training.

In the **Deductive Method** we begin with rules and definitions, explain and illustrate them, and then apply them to fresh examples. When a teacher tells his pupils that "a Noun is a name," and that "John," "cow," "school-room," "slate," are Nouns because they are names, and afterwards sets the pupils to pick out the Nouns in sentences, he teaches deductively.

In the **Analytic and Inductive Method** we start with several suitable examples, cause the pupils to examine these carefully, and lead them to discover rules and definitions, which they may afterwards apply deductively. *Copious suitable exercises on the rule or definition are the best means of fixing it in any case.*

If the first plan be adhered to *rigidly*, the pupils are kept at work for a considerable time at subjects which are in the main arbitrary and unmeaning to them; they talk about what they do not understand. They cannot comprehend the purpose, and have only a very indistinct idea of the value of the study. Further, the learners are not "educated;" what is in them is not "drawn out." Yet there is no doubt that after a time the pupil is able to apply the rules he has learned. and that he becomes acquainted with the general principles which underlie them.

In the second case, the lessons may be made more agreeable from the beginning. But inasmuch as the teacher takes the lead, and as the lessons are necessarily oral, he must be sure that the pupils have thought with him, and must see that they can formulate the knowledge they have acquired, and can apply it to new cases.

As is generally the case when good results can be obtained by independent methods, it will be possible and advisable for the teacher to employ

both methods in combination; he may thus achieve a better result than he could get from the exclusive use of either.

The following plan can usually be followed :—

> The teacher should *settle beforehand the exact wording of the rule or definition* he intends to deal with, and *prepare his examples* accordingly.

Analysis and Induction. From examples, duly arranged on the black-board, lead the children's thoughts up to the underlying generalization, definition, or rule.

Formulating rule, &c. Help the children to express it in suitable words. It is probable that even if they have formed an idea, they may be unable to enunciate it properly. *Insist on it being learned exactly,* that it may be used as a standard in future.

Deduction. Give numerous examples and exercises, constantly referring them to the rule. Examples and rules then explain and illustrate one another, and both are likely to be firmly associated.

> This plan is not only workable, but a skilled teacher can make it interesting.
>
> Starting with examples and facts within the child's range, and passing on to generalized statements and rules founded on the facts, the method conforms to educational principles, such as "*Use the child's present knowledge,*" "*Begin at home,*" "*Proceed according to the learner's strength,*" "*Link new to old,*" "*Example and illustration before rule and definition,*" "*Ideas first, then words for them.*"

The general method in most Grammar lessons, and especially in early lessons, will therefore be :—

Analytic, requiring the examination of several examples.

Inductive, leading to the discovery of rules, &c., to be formulated and learned by heart.

Deductive, applying rules to fresh cases. The importance of much practice cannot be urged too strongly.

Types of Grammar Lessons.

First Series—The Sentence. The teacher wishes to teach the class the nature of a sentence, and a simple definition, such as, "A sentence is a complete thought expressed in words," or, "A sentence is a number of words put together, which make sense." He obtains from the children a few easy sentences, and writes them on the black-board. From these he shows that the sentence really expresses the thoughts of the child. He shows that words are used for thoughts, and that they may be spoken

written. This is the first step, "a sentence is made up of words." He then writes on the black-board a group of words in a confused order, as: "his ploughs farmer field," and proceeds to show the uselessness of such grouping. From similar examples he demonstrates the second part of his definition, "the words make sense." He then asks the children to make sentences about the ordinary objects in the room, and shows that in every case the thought precedes the words, and that the latter are so grouped as to make sense.

Further exercises are given in the correct arrangement of purposely confused groups, and also in the completion of elliptical sentences. Finally the children have practice in selecting sentences from their reading books

The preceding remarks will furnish matter for several lessons.

Second Stage—Subject and Predicate. Several short sentences are asked for and obtained. These are written on the black-board, and the pupils are led to see that in every case there is a word which is the name of the person or thing *about* which they are speaking. This word is defined as the *subject* of the sentence, care being taken to make the children fully understand that it is the word which is the subject, not the person or thing of which it is the name. The remaining parts of the separate sentences under discussion are shown to be what is said abou the subjects; when the distinction has been made quite clear between the parts the latter are called *Predicates*. The two terms are now used in working through typical sentences, given by the pupils, or set by the teacher. The terms and their definitions are driven home by an alternation of questions, as, with one sentence :—what is the subject of the sentence what do we say about the subject?—with the next—whom (or what) are we talking about in this sentence? what is the predicate of this sentence Judicious exercises of this nature, varied as much as possible to avoid monotony, should be continued until the pupils can readily exchange the term and its definition, and until the two are indissolubly connected in their minds.

A further exercise may be given on slates, or paper, by having separate columns ruled and headed,

1. Naming part, or Subject; 2. Telling part or Predicate;

and requiring the class to analyse sentences given on the black-board in accordance with these divisions.

N.B.—It will be noted that the foregoing deals with the logical rathe than the grammatical predicate. This is the better plan for beginners, fo whom the path to full analysis should be made as smooth as possible by presenting difficulties in the simplest way.

The plan indicated in these lessons is suitable in its full development t

the whole course of instruction in English, if this is based, as it should be, upon analysis. The main features to be kept in view are :—

1. That the pupils' own examples are dealt with whenever possible.

2. That the pupils are led to see the use of the particular part of the sentence before definition is proceeded with.

3. That they give other examples to illustrate the point under consideration.

4. That the definition, framed in simple but exact language, is so well known that it is mentally present whenever the term is used.

5. That the knowledge gained is made use of in the oral and written analysis of examples.

Grammar lessons may, in accordance with one course of English, begin with the parts of speech. The Noun is treated first, examples given by the children being dealt with, and the simple definition, "A noun is a word which is a name," educed. Nouns are picked from sentences written on the black-board, and from the reading books. Care is taken that the distinction between words and things is clear. Nouns are names only.

The course may then proceed to deal with the Pronoun, by showing the possible substitution of this part of speech for the Noun. Its use and the derivation of its name readily follow. When these parts of speech are well known, and can be readily detected, a well-prepared lesson on the Verb should follow. In this first lesson it will be well to deal solely with those verbs which clearly denote action, leaving for subsequent treatment passive forms and verbs of incomplete predication. Special attention will be necessary to the verb "to be" in its various usages.

The Adjective and Adverb are easily taught if the Noun and Verb are well understood. The lessons should be inductive, the pupils being led to see the use of the word first before proceeding to its definition, and finally being exercised in selecting from given sentences the required parts of speech, as well as in supplying them in sentences as required. The Preposition and Conjunction admit of similar treatment.

This course, though frequently taken, cannot be recommended, for though it provides a considerable amount of intellectual exercise, it is opposed to the natural development of the child's powers. To the young student of English, sentences present less difficulty than isolated words, and the teacher who deals with the parts of speech prior to the analysis of sentences tacitly acknowledges this by using sentences to demonstrate the classification of words. Moreover, the English language is to some extent already familiar to the child, who should be led to discover the grammar from the language. The opposite course is followed by the student of a foreign language, who attacks the grammar to the end that he may comprehend the language. Many teachers of foreign languages practically

acknowledge the superiority of the sentence over the word as a mode of teaching languages by leading their pupils to deal with oral and written sentences as early as possible in their course.

Lessons on Grammar treat of the Classification, the Inflexions, and the Logical uses of Words.

I. The Classification of Words. This may be best taught by *oral lessons*, and the teacher has an option as to the special method he will employ. He may begin with words by themselves, or with words as parts of sentences. The second is the better plan.

It will be possible for the teacher to lead his pupils through the very processes which the grammarian must pass through in this branch of the subject. He may show that there are differences in words, that some have certain properties in common, though they differ from all others, and that it is possible, after a sufficient examination, to arrange all words in a few classes. By a wise use of carefully-prepared examples, he may *show the distinctions and lead up to* the necessary *definitions*, which ought to be continually present in his mind as he proceeds. The *definitions should then be stated* in exact terms, and be accurately *learned* by the boys; they then serve as tests for classifying words in future cases of difficulty. This point having been reached, it remains for the teacher to *give plenty of practical work*, so that his pupils may become expert and confident; the exercises in the Grammar-book will help him here. If the "Parts of Speech" be taught thus, the knowledge of the children is likely to be more intelligent, whilst their progress will be at least as rapid as when they are taught on the "Book" method.

This will take time; the parts of speech must be dealt with one by one. Recapitulation of the ground gone over can and should come from time to time.

Definition has to be frequently employed in teaching Grammar. An accurate and concise Definition may be framed by choosing a *suitable general term*, which includes (as a class name) the name to be defined, and a *special* (or rather *the* special) *term* calling attention to some property possessed by the object *and by no other*.

A Definition applies properly only to the object defined, and serves to distinguish it from everything else.

II. The Inflexions of Words. These are numerous and involved; many lessons must be given upon them, and copious exercises used to supplement the oral instruction.

The following are the most important subjects that will require special lessons. They are arranged in something like the order in which they should be introduced. Some of them involve logical distinctions rather than inflexions, but they are mentioned here as being the most convenient place for alluding to them.

1. *Number.* (Begin with Noun.)
2. *Gender.* (Note, there is no true inflexion for Gender in English. See Glossary to Abbott's "*How to Parse*")
3. *Kind.* (Take "Common," "Proper," "Abstract," in Nouns as an example. The Noun should be taken first, the other parts of speech as occasion requires afterwards.)
4. *Person.* (Begin with Pronoun, then Verb.)
5. *Degrees of Comparison* of Adjectives.
6. *Tense.*
7. *Voice.*
8. *Mood.*
9. *Case.* (This is exceptional, and depends on the *uses* of the Noun. See later on under III.)
10. *Agreement.* (Note the inflexions consequent upon this.)

Irregularities may usually be explained as they arise; sometimes it is better to postpone dealing with them for a time. In all these matters the teacher must exercise his *discretion*. In teaching some of these subjects (Tense, for example), it would be unwise to make our first lessons exhaustive. If we teach broad facts first, and then proceed thoroughly as far as we go, we shall do well. Details may come afterwards.

Pupil teachers would do well to study this part of Grammar with care; it will do them good in *enlarging their notions*, and will enable them to *make their lessons more interesting* to their scholars.

Teachers should certainly know what Inflexion is, what purposes it serves, and how it arose.

Elder scholars will listen with pleasure and profit to the teacher who tells them that there were three numbers to Nouns in Anglo-Saxon, and five cases; that these numbers and cases were distinguished in the main by changes in the form of the words themselves; that "the Norsemen got rid as far as possible of inflexions, and so prepared the way for the greatest change that Anglo-Saxon has undergone, viz., the substitution of

prepositional phrases for inflected forms of Nouns." If, too, the teacher can show the inflexions of one or two Nouns in Latin or in Greek, in addition to the Anglo-Saxon, he will succeed in giving his boys one of the most valuable lessons on language that they could receive, even if they forget all the details, and only remember the general facts that in all languages, as far as they know, *the forms of words are altered to express differences of meaning*, and that *languages change greatly* in the course of ages.

Etymology, the Roots of Words. Some words can be explained effectively by referring to their Etymology. This is not the case, however, with all words.

Teachers must be careful not to hazard a guess here, or they are quite as likely to be wrong as right.

Such words as "*Blacksmith*," "*Backwoodsman*." carry their explanation on the surface, and the teacher who has a little acquaintance with Latin can see the meaning of "*Import*," "*Invincible*," "*Nonenity*," and other easy words. When he is sure of his ground, it is generally advisable to adopt this form of explanation in an upper class. The following examples will show how this method may be used.

Invincible (Lat.)	In = not vinco = I conquer ible = { Adj. term = able }	not conquerable ; not able to be conquered.
Palœontology (Gr.)	Palœos (παλαιος) = ancient onta (οντα) = being logos (λογος) = a discourse, &c.	a discourse about ancient beings ; the science of extinct animals and plants.
Chivalry (Fr.)	Cheval—a horse	the equestrian orders ; the knights ; knightly conduct.

The teacher will find it worth his while to make himself acquainted with the ordinary prefixes and affixes, and to learn as much as he can of the roots of our words, that he may be able to explain them thus. A knowledge of Etymology is a great aid to determining the meaning of scientific terms especially. Exercises on prefixes and affixes can be made useful and interesting ; arrange the black-board results well, *e.g.*,

teach- build-er farm-	care- hope-ful skil-	-cede pre-dict -fix	ad-vert ac-cede af-firm

If any young teacher has an opportunity of seeing Trench's work "*On the study of Words*," let him read it eagerly, and learn from it the use that a scholar may make of his knowledge of classical languages in teaching English.

It is scarcely possible to do much in studying the Etymology of words in school at present. But some of the advanced pupils might be profitably employed in this way, and we hope that more will be possible by and by.

A teacher should **have some acquaintance with another language** besides English. For many reasons it will be well if this extra language be strongly inflexional, such as Latin or Greek.

Not only will he be able to trace the history of many words, and to see a meaning in them which is not evident to those who are not in the secret, but his ideas as to the functions of language will be raised to a higher level when he can compare the Grammar of another language with that of his own, and can begin to generalize, even if it be but in a rudimentary fashion. The student's ideas of "Inflexion," for example, are widened enormously when he sees the possibilities of this branch of Grammar as exemplified in the declension of Latin or Greek Nouns, even if he go no further. The study of old English is recommended for the same purpose; it also has other manifest values.

III. The Logical uses of Words, their uses as parts of Sentences. "Every law of language is based on a law of thought. All parsing and grammatical analysis is founded on logical analysis." Thinking is aided, too, by holding up distinctly and separately the parts of a sentence which is the verbal expression of a complete thought.

The simpler forms of Logical Analysis might be introduced with advantage earlier than is usual in most schools.

Boys cannot understand "*Case*" as used in English, until they can recognize the main parts of the sentence readily. One of their greatest difficulties in parsing is overcome when they know that "*the subject of the sentence is always Subjective or Nominative in case to the Verb in the Predicate*," and that "*the Object is in the Objective Case, and is governed by the Active Verb in the Predicate*." The desirability of connecting logical analysis with the Grammar lesson is now becoming more generally recognized.

Every sentence should be analysed before it is parsed in the Grammar lesson.

The use of Logical Analysis in teaching Reading has been mentioned under that subject.

Special points in Analysis. In the practical lesson on Analysis, it is needful to pay special attention to (1) Distinguishing the Subject, Predicate, and Object of the Sentence; (2) the Noun, Adjective, Verb, and Adverb, with the relations they occupy to the sentence, and to one another; and *the forms which may be substituted for them.* The teacher must give lessons to show that words, various kinds of clauses, and subordinate sentences may occupy the same relation in a sentence.

It is well for pupil teachers to be able to make ready and complete answers to such questions as, "*What may stand as the subject in a sentence?*" "*What are the forms which the object assumes?*" *&c.* With a little thought it is easy to arrange the matter of such answers in a way which will be suggestive to boys, *e.g.*,

A walk	is pleasant.
It	
To walk	
To walk rapidly	
To walk in the country, &c. ...	
Walking	
Walking with a friend, &c. ..	
That we should walk, &c. ...	

The man	cut	a stick.
The *old* man	cut *easily*	an *oak* stick.
The man *who is old*	cut *in the wood*	a stick *of oak*.
That man *who is approaching the end of his life*	cut *with a hatchet that he carried*	*this* stick, *which had been part of an oak tree.*

If analysis be taught in this way, and technical terms be introduced *after* showing the need for them, and after giving suitable illustrations of their use, the exercise proceeds on proper lines, and becomes interesting and valuable to the learners.

Rules of Syntax. The teacher will find it *necessary to have certain rules of Syntax committed to memory.* These can usually

be illustrated by and perhaps educed from simple examples. They should then be formulated, and committed to memory, and exercises should be given upon them, as in other cases.

Among such *rules* we may mention as *of primary importance* :—

1. Agreement of Verb with its nominative in Number and Person.

2. "Active Verbs and Prepositions govern the Objective Case."

3. Agreement of Relative with its Antecedent.

4. "The Verb '*to be*' takes two Nominatives, one before, the other after it," &c.

Other important rules which do not rank so high as the above are :—

5. That affecting the "Nominative Absolute."

6. That affecting the "Nominative of Address."

7. That affecting the construction of "Nouns of Time," &c.

8. That affecting the "Factitive Accusative" and others.

Whenever in a parsing lesson any one of these rules is employed, the rule should be quoted or referred to, whether the parsing be oral or written.

Blunders in speech may be utilized to enforce some of these rules, *e.g.*,

He *live* at York. I and he *is* going home. *Me* and *him* are going home. *Who* do you want? That's *him*. I thought it was *him*. John or Mary *are* coming. John or his sisters *is* coming. I *works* for *he*. (W. Surrey and Hampshire.)

Children know these are wrong as soon as they hear them; no harm is therefore likely to be done by introducing the faulty forms, and good will be done by requiring children to test them by the rules, and then correct them.

Parsing has been called the "A B C of Grammar." This is only partly true, for although parsing is a means of instruction, and a testing exercise in the early stages, it is equally valuable for introducing and testing such of the more recondite parts of Grammar as we may have the opportunity of taking up later on. Advanced scholars, who can think, are frequently puzzled because of the different views which may be taken. It should begin as soon as the pupil has mastered the rudiments, and it should be continually used throughout the entire course.

Children should not attempt to parse until they understand the sentence.

i.e., until they perceive its construction, and the relations between its parts.

Teach the boys to arrange the details of this exercise properly; there should be a *recognized order* in which each is mentioned.

Also, in the oral exercise, require the pupils from time to time *to give a reason for every fact* which they mention, *i.e.*, cause them to put into words the process through which the mind must pass in parsing. *This practice is strongly recommended.* For example, the word "*Man*" in the following sentence would be thus spoken of:—

"*Man*," a *Common Noun*, because it is the name given in common to all men. *Masculine Gender*, because it is the name of a male.

Singular number, because it refers to but one.

Third Person (if Nouns be allowed to have "person") because we are speaking about it.

Nominative Case, because "*Man*" is the subject of the sentence.

Paraphrasing. The New Code specifies as a portion of the work embodied in Course A of the Alternate Courses in English, paraphrasing for Standards VI. and VII., introduced by "exercises in the transposition of words in poetry into the order of prose" in Standard V.

The subject is difficult and cannot be efficiently taught unless the teacher himself has a thorough appreciation of its value. It is frequently dismissed as a useless exercise, and even stigmatised as an attempt "to convert good poetry into bad prose;" but, if carefully and efficiently treated, it is a most useful aid to composition.

It increases the pupil's vocabulary, causes him to seek for the exact force and meaning of words, and trains him in the use of synonyms, thereby saving him from that tautology, which is the bane of beginners in essay writing. Furthermore, as paraphrasing is impossible without a full appreciation of the author's meaning, the pupil is compelled to think deeply and clearly until he arrive at an adequate comprehension of the passage to be dealt with. Teacher and scholar are alike benefited by the use of judicious exercises in this subject, but the former must on all occasions thoroughly prepare his examples that he may be able to deal with them freely and lucidly as his lesson progresses. In other words, he should never trust to his ability to paraphrase on the spur of the moment, but deliberately prepare every exercise before presenting it to his class.

Definition. It is difficult to say in a concise form, what paraphrasing really is, but it may be defined as the expression of the author's ideas in the student's words. It is not a mere translation of the original words into simpler ones, or a substitution of names for names, images for images, &c. The form of expression is totally changed, while the ideas embodied are carefully retained. From this it is evident that the passage treated must be thoroughly understood in all its dimensions before it can be paraphrased, and herein lies, as before stated, the great value of the exercise.

Stages of the Teaching.

1. Transposition should first be allowed. With simple lines of poetry little difficulty is met with in leading children to place the words in logical order, subject, predicate, object, and so on. An intelligent child will at once transpose such lines as,

> "Under a spreading chestnut tree,
> The village smithy stands."
>
> "Fair stood the wind for France."
>
> "So through the night rode Paul Revere."
>
> "Full many a gem of purest ray serene,
> The dark unfathomed caves of ocean bear."

The pieces should be carefully graduated, and as the ability of the children to deal with them increases, they may be of some length, involving not merely simple but complex sentences.

2. Substitution. A further step towards full paraphrasing would be the substitution of appropriate words for those in the exercise given. This is very useful practice, and should be persisted in until some considerable knowledge of words is acquired. The pieces treated need not be poetical extracts; many prose passages admit of such manipulation.

3. Paraphrasing proper necessitates the careful study of the lines given. The teacher should, by judicious questions, ascertain that his pupils thoroughly grasp the author's meaning before allowing them to write. In the earlier exercises all similes and metaphors should be avoided, and only such pieces given as can readily be expressed in simple language.

Similes and metaphors are alike inasmuch as they both imply comparison, but in the former the comparison is clearly indicated, while in the latter it is implied, the attribute to one thing being ascribed to another. Thus in the lines:—

> "The cruel rocks, they gored her sides,
> Like the horns of an angry bull,"

a simile is used ; the resemblance is pointed out clearly and distinctly. In the passages :—

"The moon doth with delight,
Look round her when the heavens are bare,"

and

"Heaven tries the earth if it be in tune,
And over it softly her warm ear lays ;"

the moon and heaven are spoken of as if they possessed the powers of sentient beings. Any attempt to paraphrase a simile or metaphor literally is usually attended by ludicrous results. The purpose of the teacher must be to train the pupils to see the reason why the figure is used, and, having found it, to use his own words to the same end. The paraphrasing of many of the common proverbs will yield useful practice in the turning of metaphorical language into ordinary speech.

Finally, the following stages may be laid down as the plan upon which an ordinary lesson in paraphrasing should proceed ; some may be omitted as skill is attained.

1. The separate sentences should be thrown into prose order.

2. The meaning of any uncommon word or phrase should be made clear. No hesitation need be felt about retaining any especial word if it cannot be adequately replaced.

3. The ideas should be sought for, none should be omitted in the paraphrase nor no new ones introduced.

Paraphrasing must not degenerate into a wordy discussion of the subject matter of the extract ; it demands considerable freedom in departing from the strict text, but the introduction of new ideas or unnecessary comments is quite inadmissible.

Precis Writing.

Definition. This literary exercise consists of the making of a digested abstract of the contents of a letter or report, or of a return containing complex and elaborate statistics. The value of the exercise as a form of mental training is indisputable, since it enforces the closest attention to the subject matter of the document dealt with, and trains the power of observation in the necessary choice of points of importance and the exclusion of extraneous matter.

Course of Exercises. It is to be understood that précis writing is not to be attempted until some considerable progress

has been made in ordinary grammatical analysis, for considerable knowledge of the structure of sentences is necessary.

First Stage. Sentences are given containing distinct phrases, the abridgement of which is possible by the substitution of a single word for those of the phrase. Such abridgments are not usually improvements in style, conciseness alone is aimed at. Example: "You will be in greater safety in this place than in any other." The prepositional phrases may be replaced by single words, and the sentence becomes, "You will be safer here than elsewhere." Similarly, "He fondly entertained the hope of return in a few years to the land of his fathers,"—becomes—"He fondly hoped to return to his native land soon." Practice should be given in replacing prepositional phrases by adverbs or other suitable parts of speech, and in supplying a comprehensive verb in place of one requiring some adjunct to fully express its meaning. Thus, in sentences the verbs, diffuse, prefer, scrutinise, would replace such expressions as mix thoroughly, like better than, look carefully into; and the verbs, taught, fled, persevered, are abbreviations of such phrases as, was a teacher, took to flight, tried repeatedly.

Stage 2. The reduction of complex sentences to simple ones. In this stage the subordinate clauses of the sentence are replaced by the equivalent part of speech, a noun clause by a noun, &c. Thus, "That the National Debt is a benefit to the community is open to argument," becomes, "The existence of the National Debt is possibly beneficial." "Then the other company which is left shall escape," becomes, "Then the remaining company," &c. "When the ice broke up, Hudson prepared for the homeward voyage."—"In spring, Hudson prepared to return home." Care must be taken that the *exact* force of the original is given in the abridgment, thus:—"Inequalities of wealth, unjustly established, have assuredly injured the nation in which they exist, during their establishment," is scarcely correctly rendered by, "Inequalities of wealth are injurious," since two important qualifications of this statement are omitted. A preferable form would be:—"Extremes of wealth cannot grow without causing injury."

Stage 3. When the formal and more or less grammatical exercises have been worked through as suggested, the pupil may proceed to write a précis of a simple story, an easy poem, an account of a reign or period in history, or of a chapter from a text-book in geography or science. It must not be a paraphrase, but a carefully thought-out—*i.e.*, "digested" abstract, embodying such salient points as to admit of the ready comprehension of the subject dealt with. Suppose such a poem as, "The Wreck of the Hesperus" forms the exercise given, the pupil will seek to remove

all superfluous phrases or words added for the purpose of literary ornament, and will give a bald sketch of the outline of the narrative on which the poem is built, as :—"The schooner Hesperus, trading in the Winter season, carried the captain's daughter as passenger. Despite the warning of an experienced sailor, the captain left port. A terrible storm wrecked the vessel on a well-known reef. The captain lashed his daughter to the mast, and afterwards kept the helm till frozen to death. The ship became a total wreck, and the corpse of the poor girl was recovered by a fisherman."

Similarly the reign of any king would be abstracted in the form of a collection of notes upon the most important events, with special reference to their sequence and a due consideration of their relative importance.

Such exercises are chosen as introductory to the actual writing of a précis of a series of letters forming a continuous correspondence on some special points. Many such examples, chiefly chosen from the official correspondence of the various governing bodies of the country, are given in books specially devoted to this subject. In all cases the plan adopted is, to number the letters in order, to write the numbers in a column, with a short note to each as to the purport of the letter or document so numbered, and finally to re-write the numbers, expanding the note so that it includes the salient points of the letter indicated. Such correspondence as frequently appears in the press relative to diplomatic controversies between our own and other governments, would form a valuable exercise in the art of précis writing for advanced students. The taking of notes, when working through a text-book, amounts to a form of précis, and the same qualities of mind, namely, a quick apprehension and a due appreciation of the relative importance of things as are needed for the former are those called for in the more systematised work.

ELEMENTARY SCIENCE.

Elementary Science.

I. This subject must be understood to refer to inductive science only, that is, to that exact knowledge of things acquired by the proper use of the senses, in contradistinction to the processes involved in mathematics, where deductions are made from general truths to specific inferences. The mind is led, when following the course of reasoning necessitated by this branch of education, to proceed from particular cases by combining results to a general truth. A careful investigation of facts must be made, no prejudice or bias must exist; but each and every one must be judged on its merits, lest the wrong conclusion be arrived at. Those statements spoken of as Laws of Nature are these general truths; they are invariably true, for any discovered violation of any one of them would cause its disappearance. Thus, the simple statement that, "unsupported bodies fall to the ground," is a scientific law which would cease to exist were it possible that any unsupported body could remain suspended in space. Science, then, is exact and organized knowledge, differing in nothing from ordinary knowledge save in these two important points. A farmer knows, for example, that certain manures are good for certain crops, if he know further the special chemical compounds and the proportions of them, which give to these plant-foods their value, his knowledge becomes scientific.

II. *Arguments for the introduction of the Subject.*

1. To observe its surroundings, and, as its powers grow, to investigate them more closely is the natural occupation of even the youngest child. Human progress has been, and is, due to this bent of mind; man in all

ages has enquired of Nature, driven in his primitive state by the stern necessity of procuring food, and in his higher development by the insatiable cravings of his intellect. The more carefully such enquiries have been made, and the more truthful the answers obtained, the more rapid has been the progress of civilization. The present century is, pre-eminently, an instance of the enormous influence of Science upon human life. Our marvellous discoveries and inventions have revolutionised existence, and now render possible an average degree of comfort immeasurably greater than that of any previous century. From these great features—of its utility, and, its perfect fitness to the natural powers—the subject claims a place in the education of every child.

2. As a means of training the senses, developing the powers of observation, and quickening the intelligence, a well-arranged and skilfully-taught course of science lessons is not surpassed by any other method open to the teacher. The pupils see and handle actual objects, their bodily senses are directly appealed to, they contrast and compare objects present to their sight, they see experiments performed from which they deduce truths by the exercise of their own minds, and they are led to observe so thoroughly that the act becomes a habit carried from the lesson into every-day life. None the less important is the faculty of judging correctly from facts, which these lessons foster. This instruction aims a blow at that weakness of mind which allows the individual to be led, in the ordinary affairs of life, by false and ill-digested impressions; and trains him to think for himself and to arrive at conclusions slowly. If education is to be, as it should be, the formation of character, inductive science must form an important factor in its constitution.

3. A further argument may be founded upon the moral discipline enforced by science studies. Truth, pure and simple, is the end to which they lead. Nothing is left as a matter of mere opinion, nothing can be disputed, nothing accepted but that which is based upon rigid proof. The end may not be, and is not always, reached, but the path is, nevertheless, the right one. Furthermore, this search is often so baffling, the difficulties so great, that a state of mind valuable in its humility, and the awakened sense of its own ignorance and fallibility, is inculcated. The true student of Nature—and our greatest geniuses are self-named students—is so conscious of his own weakness that he is compelled to enquire and to test before arriving at any conclusion. Hasty and careless actions become obnoxious to him, and he is led to weigh carefully the consequence of any act before committing it. It may be said that the science lessons of the ordinary school are too simple and elementary to found such a structure upon; but it must be allowed that the bias given by them is to these ends, even though the pupil go no further in this branch of

4. Again, the truths of science, once fixed, are for all time. Ordinary knowledge of facts requires to be replenished and added to from time to time, but the Laws of Nature are invariable. The more full and exact our knowledge of these laws, the more perfect our obedience to them, the happier and more useful our lives become. Science, moreover, adds greatly to our enjoyment of the ordinary aspects of our surroundings. The botanist finds in the tangled hedgerow a fund of interest; the geologist revels in the secrets laid bare in an otherwise uninteresting quarry or railway cutting; the student of physics takes a pleasure in the contemplation of a soap-bubble, which represents to him the workings of laws, the discovery of which ranks among the triumphs of the human intellect. To the full and due appreciation of all art in its highest sense, some scientific knowledge is necessary: the picture, the statue, the poem, appeal to faculties in the mind of the cultured man which are absent in the uneducated brain.

5. Lastly—it has been argued, and the prejudice still lingers, that Science is irreligious. It should rather be said that its neglect is so. Our mental powers are given for use; how can they be used better than by seeking to know the truth about the marvellous world in which we live? No true student of Science can refuse to acknowledge the existence of a Creator; he arrives, time after time, at a conclusion which forces the necessity for such an Existence upon him. The very eagerness with which he devotes himself to his studies, is worship in itself, and worship of the best sort. Professor Huxley has well said, that "Science and Religion are twin-sisters."

This antiquated, and now almost exploded argument against the introduction of scientific studies to the masses, is rapidly dying a natural death, thanks to the good fruits produced by those leaders of modern thought who combine scientific attainments with deep religious sentiments.

III. *The aims of the Teaching.*

The object of a science lesson is twofold.

(*a*) To give information.

(*b*) To increase the intellectual powers.

Of these, the latter is immeasurably the more important. Herein lies the difference between the courses set by the Code, and those, more or less, isolated object lessons which they are fast replacing. To tell a child that coal is an opaque body is a simple thing; to lead it to ascertain the difference between coal and glass, to observe that it can see through one but not through the other, to carefully lead the mind to seek for the cause of this difference, and finally to elicit the different behaviour of the

bodies with respect to light, is a difficult one, calling for genuine teaching power, and truly educative. The purpose to be kept steadily in view is then to lead the pupil to think for himself. Nothing should be told except as a last resource. Bare facts, difficult names, stereotyped definitions, and mere memory efforts should be avoided. The training of the powers dormant in every child-mind is the goal of all true science teaching.

The pupils must learn "to see," and to reason clearly from what they do see. Scientific nomenclature they will acquire as time progresses; facts they will remember from their relative associations; and their minds will be prepared to grapple successfully with those higher branches which call for earnest study. It is obvious that no mental powers, however great, enable the possessor to evolve the names, terms, and definitions incidental to such sciences as chemistry and botany. These must be learned, they are matters of memory pure and simple; what is argued is that they are not of educational value, and as such are objectionable during the growing period of the young intelligence.

IV. *The Teaching.*

All elementary science lessons are given with the aid of special apparatus. The objects under discussion are present to the view of the pupils and, as far as possible, they should handle them, perform the experiments and talk about results, themselves. Thus, in lessons on length and area, a member of the class should perform measurements, repeating clearly what he is doing and the results he arrives at—as, for example, the area of a slate is to be found; previous teaching has proved the necessity of multiplying length by breadth to find area. A boy is selected, he measures the length of the object, and tells the class in the following form, "I find this slate is 10 inches long," so, the breadth, "I find it 7 inches wide." He writes these numbers on the black-board, accompanying his proceedings with such explanations as, "I must multiply length and breadth together to obtain area." "I find the area of the slate is 70 square inches." Complete sentences are used, and the employment of the pronoun of the first person brings home to the pupil his power to do things for himself. The following abstract from the New Code of 1897, page 44, succinctly and clearly defines the end of the teaching—"It is intended that the instruction in elementary science shall be given mainly by experiment and illustration. If these subjects are taught by definition and verbal description, instead of by making the children exercise their own powers of observation, they will be worthless as means of education. The examinations by the Inspectors will be directed so as to elicit from the scholars, as far as possible in their own language, the ideas they have formed of what they have seen."

A slovenly style of answering must on no account be permitted. Clear, crisp sentences should be insisted upon; and whenever questions are asked, as they necessarily are at times, admitting of alternate answers, the same pupil must be required to give a reason for his answer. Thus, if a pupil is asked, "Which is the harder, lead or zinc?" he may guess and give the correct answer. Test him by asking, "How do you know?" He must then show that he is acquainted with the experiment of scratching a piece of the one metal with the other. It is better to do this than to laboriously avoid such questions. Full and thorough preparation is necessary on the teacher's part. Those who have been accustomed to stuff their children with facts, complain that these science lessons, especially the earlier ones, contain "nothing to *teach*,"—nothing to *tell* is what they really mean. The writer, who gives several such lessons in the course of every school week, usually finds it necessary to allow double the time set forth in the text-books used to each and every lesson, so essential is it to elicit, and so slowly and carefully has the process to be performed. Preparation enables the teacher to proceed to his ends by alternate routes, failing one he tries the other, and the scholars are led to *find out* what the unprepared teacher *tells them*.

V. *Choice of Courses.*

Supplement to Schedule II., Alternative Courses (Class Subjects, Elementary Science) of the New Code, specifies nine alternative courses in this subject, exclusive of a special Course "S" for small schools. No exception can be taken on the ground of unsuitability to the capacities of the scholars, or their probable requirements in after life; a successful effort has been made to provide for every case, and it remains for the teacher to make a wise choice from the courses offered. He should be guided by:—

1. *Local circumstances.* Courses C, C*, or D (botany, horticulture, or principles of agriculture) would be very much out of place in a town school, though exceedingly useful, interesting, and easy to deal with in the country, where the various concrete illustrations of the lessons are ready to hand. Course A (Mechanics), as furnishing the base upon which all science is built, that is, a knowledge of the states and common properties of matter and the principles of measurement, is perhaps the most generally adopted. Many specialists have prepared text-books on the course, containing the lessons fully prepared, experiments specified, and lists of apparatus required. Should the teacher prepare his own he may take the opportunity to enter the short summaries of these lessons among those required by paragraph 3 of Instructions to H.M. Inspectors. In this case care must be taken to specify the actual points brought out by the lesson, and

its connection with preceding and following ones. Thus, in a lesson to Standard II. on "a wheel," the shape and use of the object are brought under observation, and the great advantage of sliding over rolling friction when free movement is desired; the lesson should follow one on "the cylinder," and lead up to the lessons in the higher standards on "matter in motion," and "the mechanical powers." The objects required to illustrate the lesson must be specified, and a careful list, in order, given of the experimental illustrations. Course H (Experimental Physics, Arithmetic, and Chemistry) is another very valuable one, involving and necessitating as it does much individual work on the part of the pupil. Where circumstances as to space, supply of apparatus, and teaching skill permit, this course should most certainly be adopted.

2. *Qualification of the Teacher.* This ought not to be *the* important matter in deciding the course chosen, seeing that the amount of actual knowledge is not great. At the same time, serious mistakes may easily be made by one who is only a step or two in advance of his pupils, and it will be well for teachers taking any course to possess the certificate granted by the Science and Art Department in the science subject involved. Personal bias is, however, important. The teacher, with a natural bent towards botany, will wish to teach it; the mathematician will lean to Course A or H; but this must not be; the child, not the teacher, is the important person; what will most benefit him, and what can best be taught him, these are the guides to follow, and the teacher must subordinate his personal tastes to them.

3. *Supply of objects and apparatus.* In some of the courses this must be a determining factor. Botanical specimens are not easy to obtain in a large town, nor are agricultural principles conveniently taught where pupils see more lamp-posts than ploughs. Common sense decides such points. On the other hand, Courses F and G involve, in the higher stages, considerable experimental power, and only those skilful in such matters should attempt them. Nor must expense be lost sight of, for, unfortunately, this is often a serious consideration.

Finally, it must be urged that considerable thought is necessary before deciding the Course to be taken, seeing that a change should not be made if it can possibly be avoided.

VI. *Apparatus and Experiments.*

1. From an economic as well as from an educational point of view, apparatus should be simple. Costly instruments are usually showy, and distract attention from the lesson itself, besides leading the pupils to think that they are essential to scientific experiments. As a matter of fact, some of the most valuable results have been obtained by the use of the simplest

apparatus. Many most useful lessons connected with Course A require no more objects than are usually found in an ordinary house, *e.g.*, a glass of water, salt and sugar to dissolve, a spoon, fine cloth as a filter, a small kettle, a slate to condense vapour, a poker, a hammer, a table knife, and the like. Some few pieces of the so-called scientific apparatus are necessary, as a small spirit lamp or stove, a few beakers or flasks, some simple instruments as a spirit level, thermometer, and, in Standard VII., models of the mechanical powers. Simple apparatus has the further good point that it holds out encouragement to the children to repeat experiments at home. Some remarkably good results in crystallisation, in frictional electricity, and in the construction of model sets of pulleys, &c., have come under the writer's notice. This should be encouraged, for its educational value is enormous; a child who has with his own hands filled, securely stoppered, and exposed to the frosty air of a winter's night a small bottle of water, to find it fractured by the expansion of the solidified liquid, is convinced clearly as to the cause of "bursts" in water pipes and the like, and will not fall into the common error that the thaw does the mischief. Similarly, one who has himself made and experimented with hydrogen gas, will not be likely to search for an escape of coal gas with a naked light, when he has grown to the stage of a householder. Apparatus, however simple, should be kept thoroughly clean; all glasses, spoons, &c., should be washed and dried before being replaced in the cupboard, so as to be ready for use on the next occasion. Supplies of the various articles which are actually used up should never be allowed to run out. Thus, if the spirit lamp is a factor in the course, the bottle of methylated spirits should never be empty. If long sticks of sealing wax are required, and are melted for experimental purposes, fresh ones should always be to hand. The same principles which regulate the domestic economy of a well ordered household apply to the case of apparatus.

2. Experiments should never be attempted in class without previous rehearsal in private. The apparatus should be arranged before the lesson begins in a separate room if possible, and the teacher should work through everything. He should see that every article is to hand, and in working order. Nothing is worse than to find an essential article lacking; matches missing when a light is needed, the spirit lamp empty or minus a wick, no water to hand in lessons calling for its use, and numberless other inconveniences which are awkward to remedy during the stress of teaching, to say nothing of the bad moral effect upon the scholars. Professor Faraday is said to have invariably tested everything personally, down to the condition of the stoppers of bottles, before giving one of his lectures. This same minute care is infinitely more necessary where teaching replaces lecturing.

Experiments themselves should always be as simple as possible; the pupils have then no difficulty in seeing the result aimed at, as their thoughts are not distracted by a mass of details. Condensation, for example, is better taught by the aid of a small kettle boiled by a spirit lamp, with a cold slate to condense the vapour, than by using an elaborately arranged glass retort, with its stand, cold water jacket, and other etceteras, convenient in actual working, but bewildering to the child's mind. The apparatus, having been presented and explained, the pupil must know before the experiment begins, exactly what to look for, and the experiment should give the desired result and no other. A celebrated scientist was once hurried by an ardent student to the laboratory of the institution of which he was the head, to see a certain successful experiment repeated. Laying a restraining hand on the student's arm, the professor trained observer as he was, asked impressively, "Now, what am I to look for?" In elementary lessons this clear understanding of the purpose of any operation is an absolute necessity. If it is not patent to all what they must look for, many will not see it, their attention will be drawn away by some minor accompaniment of the desired result.

In conclusion, it must be noted that this subject requires much care and thought if it is to produce good results. Out of school hours preparation is an absolute necessity, and the lessons are usually satisfactory in proportion as this is given to them.

DRAWING.

Importance of the Subject.

Drawing gives a training of the eye and hand which is essential to the great majority of workmen, and which is never well acquired if deferred to adult years. It is now compulsory in the boys' departments of all elementary schools, and the main principles of its teaching have therefore been included in this manual.

The addition of a new subject of such importance to the curriculum, is to be accepted in a cheerful spirit, and its value fully recognized by all concerned. When well taught, it becomes highly interesting to the pupils, but to secure that it shall be well taught the teacher must thoroughly master his subject. The possession of artistic skill is not of such great importance as is a thorough knowledge of principles and a wider acquaintance with the different branches than the lessons require. This latter is especially desirable in model drawing and geometry. Additional arguments may be found for the introduction of drawing into the school life of every child when the truly educational character of the training is considered. The children are forced to depend upon their own exertions, and are trained to that self-reliance so essential to future success; moreover, drawing is the natural outgrowth of the child's ordinary powers of observation. "Young children, and savages, who are in many matters on the same mental plane, draw objects which appeal strongly to them, almost instinctively; and their productions, crude though they are, should be regarded as guides to the natural path by which education should proceed. Drawing must be systematically taught through the whole of the school year; it is absolutely impossible to cram for results, and most mischievous to attempt to do so. The teaching of the lower standards is of great importance, habits are

there formed which are exceedingly difficult to eradicate if bad, and which render the upper standard work pleasant if good.

Kindergarten Drawing will be fully discussed in the chapter on that branch. Following this in the lower standards, comes the handling of the ruler and pencil in combination.

Ruler-drawing, as this is termed, involves the following points.

1. All apparatus, rulers, lead pencils, rubbers, paper, slates, and slate pencils, should be of good quality. The want of skill on the part of the pupils enforces the necessity of as much aid as can be given by providing good materials.

2. Correct posture and correct holding of the ruler must be taught. The child should sit squarely in front of the desk, not with one side towards it as in some styles of handwriting; both arms should be free, and the head held erect. The ruler must be laid flat on the slate or paper, and maintained in position by the fingers of the left hand well spread over its length. The edge furthest from the child must be used, and all lines ruled from left to right. The physical conformation of the body precludes the opposite course, though in carelessly supervised infant-drawing it is common. The child should also be shown how to place the set-square on the ruler, and at an early stage how to rule parallel lines by the aid of the two instruments.

3. Some short preliminary drill in posturing, placing the hands and holding the ruler, should be used in the earlier lessons. A special lesson on the ruler itself and its divisions—inches and their fractions—will be required before commencing the actual drawing. Thus, the class being provided with 12″ rulers, the teacher questions them as to the marks they see on them; they count the longest ones, and find that eleven of these divide the ruler into twelve parts, all of which are equal. The teacher tells nothing, but elicits all by questions. The name, "inch," is introduced, and further questions draw attention to its divisions into halves and quarters. Some simple mental exercises, proved by actual counting, will serve to show how many of each fraction occur in one, two, or any easy number of inches. The lesson may be prolonged and rendered further useful by allowing the pupils to use their rulers in the actual measurement of convenient objects, such as slates or books.

4. Definitions of lines, angles, geometrical figures, and the like, will be necessary as the class progresses. These should be exceedingly simple at first, and thoroughly understood. No attempt at parrot-like repetition is

permissible. Simplicity must not, however, lead to inaccuracies; thus, the distinction between perpendicular and vertical lines should be taught clearly at the proper stage, and no confusion of the terms permitted.

5. Cleanliness of work is an absolute necessity in this as in all other branches of drawing. To this end the hands and jacket sleeves of the pupils should be frequently inspected. Due care must be bestowed upon slate pencils and blackleads. These should be sharpened to a fine tapering point, to produce which no tool is equal to a keen penknife. The operation must be performed out of lesson time, and, from its difficulty, will fall mainly to the lot of the class teacher; senior pupils may be able to point their own leads. Slates need a thorough washing at intervals. India-rubbers are hardly necessary to this branch of drawing, and their use is so often abused that they should be withheld as long as possible.

Exercises in ruler-drawing consist in the ruling of lines in various directions, horizontal, perpendicular or oblique, parallel or inclined to one another. These are combined in figures, simple in the earlier stages, but afterwards calling for considerable ingenuity, as the finished copy often involves the erasure of some construction lines. The lessons should be given from the black-board, the teacher being provided with a proper ruler and pointed chalks. The children follow the black-board drawing step-by-step, the teacher interspersing the necessary questions as to definitions and processes, and passing as much as possible among the scholars to check their work. Neatness and accuracy should be insisted upon. In more advanced lessons a finished copy, the construction of which involves some lines other than those shown, should be used, and the method of construction elicited by questions.

Scale-drawing is the end to which the foregoing works. From simple lines and figures of known lengths, the child proceeds to the use of scales and the construction of outlines by their aid.

1. Compasses, or preferably dividers with plain legs, are required to carry measurements from scale to copy, and set-squares are necessary for the construction of the numerous right-angles.

2. The method of constructing a plain scale should first be taught. The following example will serve as a guide to the style of lesson.

Suppose it is required to draw a scale of $\frac{1}{2}''$ to $1'$, on which $5'\ 6''$ can be measured. The children first calculate the extreme length required, in this case $3''$, $2\frac{1}{2}''$, for the $5'$ and another $\frac{1}{2}''$ to divide. They draw a line horizontally across their paper $3''$ long, following the teacher's black-board work. They erect perpendiculars $\frac{3}{8}''$ long at each end of this line, and mark $\frac{1}{4}''$ on each of them. Joining these points they have constructed a narrow rectangle which represents the scale. The base-line is next carefully divided by means of the ruler into $\frac{1}{2}$ inches and perpendiculars erected to the upper line from each point. The left half-inch is further divided into eighths, each of which will represent $3''$. The required line of $5'\ 6''$ may now be measured on the scale by the dividers and drawn below. The teacher, working on the black-board, uses a much larger scale, $4''$ or $6''$ to $1''$; suitable rulers are easily procured. In all scales the point one division from the left should be marked 0, and the other divisions figured from this to the right. The first space is thus left available for subdividing. Scales of miles on maps are frequently marked, straight across from 0 to the highest number, but the practice is not to be recommended.* Very simple scales must be taught first, and the exercises carefully graduated. Deal first with one inch to the foot, then half-inch, then three-quarters; then introduce yards as well as feet. Other examples would include scales of one inch to the mile, to show miles and furlongs and variations, such as scales where two feet are represented by one inch. Questions are often presented in problematic form, as:—If two-and-a quarter inches represent a longer line on a scale of $1''$ to $1'$, what is the actual length of line represented? Neatness and rigid accuracy are essential in these drawings, and are only to be secured by very careful marking of all exercises.

3. It is as well to teach the children as soon as possible to calculate the representative fraction; their ordinary mental arithmetic will enable them to grasp the process. A half-inch to foot scale is $\frac{1}{24}$, since one foot contains 24 half-inches. Graduated examples should be given, but the rule, which amounts to reducing one quantity to the fraction of another, is best deferred until a higher standard is reached.

4. Intelligence is called into play in many of the exercises, as the children often require to translate the question, set in words and figures, into a rough working sketch. The best way of commencing an exercise

* Another method is for the rectangle to be made $1''$ in height and the short perpendicular sides to be divided into eighths, or whatever fraction is required. Horizontal lines are ruled from these across the left-hand space to the 0 line. A diagonal line is drawn across this space and cuts the horizontal line, giving one or more eighths, &c., according to the line it cuts.

must also be shewn. It is sometimes useful to build round a centre line, always advantageous to construct from the bottom to the top, and some ingenuity is needed to calculate measurements not actually specified.

5. Exercises should also be given in enlarging or reducing from a copy. If the scale-drawing be well taught, these simply resolve themselves into examples involving the use of a very easy scale.

6. Squared paper affords another variation. So many squares represent 1″, or so many inches are represented by one square. Careful counting is needed, and with small squares the exercise is very trying to the eyes. The dividers can be used, and groups of squares marked off at once; this calls for careful calculation, an educational benefit. Plenty of mental arithmetic exercises on calculating squares are necessary, as: one square represents 3″, how many for 3′, for 2′ 9″, for 1′ 6″? If two squares stand for 1 foot, how many will be needed to show 4′ 6″, 3′ 9″, 7′ 6″? If 3 squares represent 8″, how many for 1′ 4″, for 5′, for 6′ 8″? Dots should mark the points on the squared paper as soon as calculations have been made, and these should be joined by neat lines. Short lines, however, may be drawn simultaneously with the counting of the squares as the pencil passes over them. The most rigid correction is necessary, as slips are easy to make, and difficult to detect in the longer lines. It is best to measure with a compass from a corrected exercise when marking papers.

Geometry. I. Plane. The definitions previously taught in connection with ruler and scale-drawing will be found useful, but they should be amplified and re-cast in more exact terms. The different kinds of lines, classified according to their direction, and the exact meaning of an angle, should be carefully taught. The measurement of angles in degrees can be shewn by a simple drawing of a circle. The whole space bounded by the circumference is divided into 360 parts; one-fourth of this gives an angle of 90°, or a right angle. The definition is, perforce, cumbrous, and not so important as is a thorough comprehension of the size and general properties of the angle. Angles of other dimensions should be illustrated, and the terms, "obtuse," and "acute," introduced and used. Exercises suitable at this stage would be the drawing from dictation, by ruler only, of right, obtuse, and acute angles, and some revision of lines from the ruler work. Triangles, next dealt with, are named from their angles or sides.

Be exact as to distinctions:—thus, a "scalene" triangle contains *three* acute angles; a right-angled triangle *one* right angle. The terms, "equilateral," "scalene," &c., once introduced, should be taught and used. The relations of sides and angles should be known; the following theorems are indispensable:—

1. Every equilateral triangle is also equiangular.

2. The three interior angles of any triangle are together equal to two right angles.

From these deduce the size of each angle of an equilateral triangle, and the size of the angles at the base of an isosceles triangle when size of angle at apex is given, noting

3. That the angles at the base of an isosceles triangle are equal to one another,

4. The angles made by one straight line, standing upon another straight line, either are two right angles, or are together equal to two right angles; and,

5. That when one straight line crosses two parallel straight lines it makes the alternate angles equal.

If these are intelligently taught in connection with problems involving them, they become keys by which the pupils may deal successfully with new problems presented to them.

Scale-drawing may, with advantage, be revised in connection with the early work. As far as possible, problems should be thought out by the pupils, not merely copied, and remembered, or forgotten, according to the number of times the mechanical process is repeated. Thus the construction of a right angle, with compass and ruler, *may* be taught mechanically by the pupils repeating, step by step, in their books, the work of the teacher on the black-board; but it may be made a useful lesson by treating it as follows:—

1. Line drawn by pupils any convenient length.

2. Semi-circular arc described from one extremity as centre with any suitable radius.

3. This arc cut by its own radius from point of contact with line gives angle of 60°; repeated, the process gives angle of 120°. These facts are elicited by questions, pupils having previously had lessons on circle and degrees.

4. Having found 120° from original line the problem is to find 90°. The solution is obvious—bisect the last 60°.

5. Show that the arc subtending this angle is one quarter of the whole circumference, and so lead back to the circle of 360°. The pupil who is brought to find this out by skilful questioning will be far more likely to remember it than the one who learns mechanically to make an arc, to cut it once, again, and then bisect, to say nothing of the value of searching for the "why" of the process.

Some of the problems usual in text-books, and indispensable for practical purposes, must be taught mechanically, since their solutions are beyond the scope of the pupils, such as the division of a line into any number of equal parts. But the true teacher will lighten his own work, interest, and truly train his scholars, by leading them to solve those within their power. For example, knowing that the three angles of any triangle are together equal to two right angles, the following furnish useful exercises:—

1. To construct a triangle having an angle at the apex of 60°.
2. To draw three lines, each $2\frac{3}{4}''$ long, at angles of 60° to each other.
3. To construct an isosceles triangle having an angle at the base of 30°.
4. Construct a triangle having a base of 3″ and two angles of 60° and 45° respectively. What is the size of the remaining angle? Scale $\frac{3}{4}''$ = 1 ft.
5. A triangle has an angle at the apex of 30°, and its sides are isosceles. Construct it, and mark in degrees the measurement of each of its angles.
6. Construct an isosceles triangle having the exterior angles at its base 75° each. What size are the interior ones?

II. **Solid Geometry** calls for greater skill, and makes a considerable demand upon the imagination of the pupils. It may be defined as the representation of solid objects as they really are, in contradistinction to model drawing, which deals with the apparent shapes of bodies.

Stages of Teaching.

1. **Introductory Lessons.** By questions, the pupils may be led to see that solid bodies, *i.e.*, those possessing three dimensions, cannot be adequately represented on a flat surface, such as their drawing paper, by one drawing. Teach the necessity of at least two views. Explain, and name, "plan" and "elevation," refer to the plan of a house which shows direction of walls on the ground, and the elevation which shows the appearance of the house above ground.

2. Show (*a*) that the elevation is the view from the front, and may be marked on the wall. (*b*) That the plan is the view from above, and may be traced on the floor. Introduce the terms vertical plane and horizontal plane. Show that to represent these on a flat surface they must be separated by a line. Name this "line of intersection," "horizon line," or line "*x y*." Work this fact out by means of a small cube held between two boards, hinged so as to form a right angular or a plane surface at pleasure. The cube can be traced on one board and then on the other and the two flattened to show how the planes and their drawings are represented on ordinary paper.

3. **A point.** In the right angle formed by the boards, hold a small ball. Let a pupil mark on the vertical board the position it appears to have, and similarly on the horizontal one. Open the boards and show that the distances from the intersecting line correspond to the distances from the actual planes when in position. Disregard shape, as the ball is to represent a point. Repeat this until clearly understood, and on no account hurry over it; the pupils must see that distances from one plane are marked on the other, and *vice-versa*.

4. **A line.** Introduce an uncut lead-pencil between the boards, to represent a line, and, by carrying it back to one plane, and then down to the other, show that the elevation and plan vary according to the position in which the pencil is held. Parallel to both planes, the plan and elevation are lines of the same length as the pencil; similarly work through other positions, as:—parallel to V. P. at right angles to H. P. and the reverse. Do not take oblique positions, involving a shortening of the line, until the simpler ones are thoroughly understood. Allow the pupils to hold their own leads at arms' length, in the positions indicated; dictate the positions to them, and continue the exercise until everyone can immediately place the pencil correctly. When this is mastered, ask, in each case, what the plan and elevation will be. They will vary from a point through lines of different lengths to lines the full length of the object. It is absolutely necessary that the pupils should acquire the ability to imagine both the object and the drawings required to represent it, and to do this with solids they must first thoroughly grasp the "point" and "line." Simple exercises on paper may be worked, the actual drawings being ordinary lines, and the projectors—straight lines joining points on plan and elevation—being finer lines. The order of the lessons will be somewhat as follows.

Draw the plan and elevation of a line 5 ft. long at right angles to the vertical plane, and parallel to the horizontal plane; the nearest end is 3 ft. from the vertical plane, and the line is 4 ft. above the ground. Scale $\frac{1}{2}'' = 1'$. The papers or books are divided by a horizontal line to represent the line of intersection, then:—

(*a*) Let pupils hold their leads in position indicated by the line.

(*b*) Question as to plan (a line), and elevation (a point).

(*c*) Elicit that distance from V. P. is marked on H. P. Find the required distance and mark it. From the point so obtained draw the plan of the line.

(*d*) The elevation being a point, the distance above the line of intersection is the only thing which needs care. The drawing is simply a bold dot. Note that all distances and lines must be rigidly accurate, according to the scale set.

5. **A square.** The teacher will next use a square of cardboard of convenient size. The pupils may use their drawing books, care being taken to distinguish between a square and an oblong, if the books are of the latter form. By the use of the hinged planes, the varying shape of the square in different positions may be worked out and drawn. Those suitable are:

(*a*) At right angles to both planes—plan and elevation, lines equal in length to sides of square.

(*b*) Parallel to one plane, at right angles to the other—one drawing will be a square, the other a line.

(*c*) Parallel to one plane, at an angle other than a right angle to the other. One drawing an oblong, the other a line.

Cases of obliquity to both planes are beyond the scope of these lessons, but some difficult problems need to be worked, as:—

(*a*) Where the square rests on one corner with a diagonal making right angle with one or other planes.

(*b*) The converse of this where a plan or elevation of a diagonal is given and the full drawing is to be completed.

(*c*) Two lines given as the elevation of two squares, standing at angles to the horizontal plane, the plan to be drawn. Some of these involve extra work to calculate the length of side, but they are well within the power of an intelligently taught class. In every case there should be as little "telling" as possibl, ; the pupils must be led to think out the problems. Progress under such conditions is slow at first, but becomes rapid in the higher stages, where otherwise it would be impossible.

6. **The cube** may next be dealt with in different positions and at different angles to the planes, taking the simpler positions first and advancing gradually to those more complex. The cube used in model drawing should be constantly before the class, and when working any problem it should occupy as nearly as possible the position indicated. Many questions take the form of drawing an elevation from a given plan and the converse; these are easier than those involving the construction of both drawings. Care must be taken to secure accuracy in the figures when working to

scale, and neatness is essential, especially as the drawing becomes complex. It is sometimes well to figure or letter similarly the corresponding points in the two drawings.

7. **The solid oblong or rectangle** calls for similar treatment, and some variety may be given to the exercises by introducing the drawing of actual objects, as maps hanging on the school wall, drawn correctly to scale as to size and position; the front of a building, showing doors and windows; the ground plan of the same, showing doors, windows, and fireplaces in rooms. The prisms and pyramids in the simple positions usually given present little difficulty if the principles involved in the working of the easier forms have been well taught. Circular solids need care in the drawing of the ellipses. In setting off the widths for the elliptical ends, the greatest exactness must be insisted upon, or it will be found impossible to secure good curves.

8. **Sections.** These may be well illustrated by cutting out the required model from a large potato or turnip, and making the section before the class. Modelling clay may be used, but it is perhaps hardly so convenient.

> (*a*) First illustrate and define a section—the surface laid bare when a solid is cut by a plane passing through it.
>
> (*b*) The direction of this plane is shown by a straight line, which is the edge of the section. If the section is a vertical one, this straight line appears on the plan; if a horizontal one, on the elevation.
>
> (*c*) The section is obtained by carrying projectors from the extremities of the line representing its edge, as shown on the plan, to the elevation if a vertical section, and the reverse if a horizontal one. It should be shaded by lines, space $\frac{1}{10}''$ apart, and making angles of 45° with $x\,y$. It is perhaps needless to remark that the actual plan or elevation should be drawn first. The pupils should be gradually led to dispense with concrete illustrations of the sections required, and should be encouraged to form a mental picture of the section formed, when the plan or elevation is presented to them. In some cases, the true shape of the section, that is, the shape seen when the section is viewed at right angles to its plane, is asked for. It should be frequently drawn in ordinary practice, and the difference between the true shape and the plan or elevation of the section should be carefully explained.

Model Drawing. In this branch of the drawing course, a distinct and important departure is made from the other subjects; the finished copy drawn by each child differs in shape, if correct,

from that of its neighbour, and the collective teaching must, therefore, be thoroughly sound as to the principles embodied; mechanical copying is impossible, and the powers of observation must be trained and perfected. The children need, in fact, to be taught to see, as well as to record, what they do see.

The subject may be defined as the art of representing, on a plane surface, a solid body as it appears to the eye.

The stages of teaching will be as follows:—

1. Some preliminary explanations should be given as to the increase and decrease in the apparent size of objects, as the eye of the observer approaches or recedes from them. Simple illustrations may well be taken from objects seen in the open air. The lamp posts along a straight road appear smaller and smaller as they increase in distance; the bricks in the playground wall appear smaller at the far end than do those close at hand. It should be observed that this applies to parts of the same object. Note also that a small object held near the eye (the other eye being closed) hides a much larger one some distance away.

2. Reference should be made to railway or tram-car lines, rows of gas-lamps or telegraph posts, hedges on straight roads, and the like, to show that as the eye travels to the horizon, objects become so small that they seem to disappear, parallel rails run together, telegraph posts dwindle to the size of pins. This appearance is termed "*vanishing*." Again, the distances between objects really spaced equally apart, become less and less; this is "*foreshortening*." Having referred to out-door objects, the same principles should be applied to a large model, such as a good-sized rectangular box, placed to the right or left of the class. Careful observation will show that the front vertical edges look longer than the back ones, and, hence, that the long sides appear to approach one another.

3. **The picture-plane.** These principles must be thoroughly and soundly taught, and since they are indispensable, a practical illustration should be given of the picture-plane. A large sheet of glass should be fixed vertically before the class parallel to the front row of desks; behind this a cube rests with its faces at angles to the glass sheet. A sharp boy indicates the particular spots on the glass where the corners of the cube *appear* to be. The teacher marks these with a piece of chalk damped in red ink. The points joined give the actual appearance of the cube to the boy-spectator. From this the principles of vanishing and foreshortening may be *proved*, a great advantage if the pupils are dealing with the matter intelligently. The drawback to it is that only one pupil at a time sees the exact view presented on the plane. The pupils must be led to imagine their own picture-plane

on which the eye forms an image of the object; this plane is always at right angles to a line from the eye to the object, and since no two heads can occupy precisely the same position at the same time, no two persons can have the same view of an object simultaneously.

4. **Judging direction and making measurements.** In the earlier lessons each pupil should be provided with a flat wooden ruler, 9″ or 12″ long. This is preferable to the lead-pencil for the above purposes, as the edges are more clearly defined, and the scale is useful for purposes of comparison. Referring to a distant door or to a hanging map, placed on a wall to the right or left of the class, the pupils should be instructed to hold their rulers horizontally at arms' length, and to bring them to the same apparent level as the top and bottom lines of the object viewed. The converging of these lines becomes obvious, and the principle of horizontal lines, vanishing to the eye-level, is easy of demonstration. The pupils can be trained to see that all horizontal lines above the eye vanish downwards; those below, upwards; and that *all* horizontal lines viewed at one time vanish to the *same* eye-level. Vertical lines should next be viewed to determine their comparative lengths. The ruler is held vertically at arm's length in the right hand, and the left eye closed. The top of the ruler is next brought in a line with the upper extremity of the nearest vertical line, and the thumb is moved up or down the ruler edge until the lower point is just covered. This gives, on the ruler, the apparent length of the nearest vertical line, which becomes the standard from which all the other lines are judged; these may be similarly measured by moving the hand right or left until the ruler edge covers them. By turning the hand, the ruler may be brought into a horizontal position, and the lengths of horizontal lines compared with the standard set. It is not always necessary to move the thumb, though this can be conveniently done through a limited area, as the inch marks on the ruler offer a ready means of comparison. One or two practices will be sufficient for this work, the pupils sketching rapidly on slates, as the lines are placed on the black-board, beginning with the nearest upright line.

5. **A horizontal plane.** The pupils now proceed to sketch a black-board or large slate laid horizontally in front of the class; two or even three may be necessary if the class is a large one, and they should be so arranged that every pupil sees two edges of the object to be drawn. Thickness is neglected, the end of the lesson being the correct drawing of four straight lines only. The stages of the lesson are:

(*a*) *Ground-line.* Pupils hold their rulers horizontally, supported at the ends by the forefinger and thumb of each hand, so that they are on a level with the nearest corner of the board to be drawn. The edge of the ruler represents the ground-line; they sketch this on their papers close to the bottom of the sheet, while the teacher draws a

similar line on the black-board. The point on this line where the nearest corner of the object appears is marked. Reference should be made to the picture-plane, and each pupil led to see that the line he has drawn is the lower edge of the picture-plane which he must imagine. The teacher's drawing will be of such a size as to include the actual vanishing points; the pupils must imagine such points *off* their papers.

(*b*) *Eye-level.* The rulers, held so that their flat surfaces are parallel to the floor, are raised until the edge or thickness only can be seen; the model is clearly visible at a lower level. The ruler is now dropped in the same plane to the ground-line, raised to the eye-level, dropped once more to the ground-line; and next raised until it is level with the furthest corner of the object, then raised to the eye-level. This is repeated until some estimation can be made of the relation between the two distances. The teacher raises a vertical line from the point of contact of the nearest corner of the board with the ground-line, and, judging the spaces required, draws the eye-level line parallel to the ground-line. The children copy the vertical line on their papers, estimate the position of the eye-level, and mark the height of the furthest corner of the board on their vertical measuring line.

(*c*) The pupils hold their rulers to form a ground-line in the air, and consider the angles at which the nearest sides set off from the nearest point. These are sketched on the black-board, the pupils following, but not copying, since each has his own view to represent. The teacher produces his lines until they reach the eye-level; the scholars carry theirs until they reach the edges of their papers. It will materially assist them to imagine the eye-level and vanishing points if the teacher rule lines around his black-board drawing to represent the edges of their papers; his eye-level and vanishing points will be some distance outside such lines.

(*d*) The lengths of the sides drawn are now estimated by using the ruler held horizontally, and comparing with the height of the back corner already marked on the vertical measuring line. From their extremities the back sides are drawn, each to meet its companion front side on the eye-level, and the two intersecting at the back corner.

The teacher, having completed this on the black-board, will point out to the class before they make their drawings of these sides:

(1) That the back corner is not necessarily on the vertical measuring line. After a few practices they will be able to judge where it should fall by the angles which the front sides make with the ground-line.

(2) That the pairs of sides must vanish to meet at the eye-level, not at different levels.

If correct, the drawing appears to lie flat; if there is any fault in the over-estimation of the eye-level it looks as if raised at the back, or if the sides vanish to different levels, as if distorted in shape. The teacher must pass around his class as frequently as possible during the course of the lesson, correcting errors, and paying special attention to those pupils who are slow to grasp the methods used. Finally, he should revise all the exercises before permitting the erasure of extraneous lines, and the "lining in" of the copy. Little attention need be given to this latter if the earlier exercises are taken on slates, but when on paper—in all model drawings—the sketch should be cleaned out with india-rubber so as to be almost invisible, working lines thoroughly removed, and the copy finished in fine clear outline. As soon as practicable after a slate exercise the same lesson should be worked through on paper; too great an interval must not intervene between these successive practices; a week is too long, consecutive days are advisable at the outset. If large slates or sheets of paper are available, the pupils may sketch the full drawing, showing actual eye-level and vanishing points, as on the black-board. A practice should also be given as an exercise, in the view of the board with two sides parallel to the ground-line; this is simple, as involving only one vanishing point, but the distance from back to front needs to be carefully estimated; beginners shew a tendency to make it too great.

6. **The cube, rectangular prism,** and objects of similar form.

(1) The pupils have now drawn vertical and horizontal planes, and are able to estimate and measure distances in either. The ground so far cleared, the drawing of solid models should advance with some rapidity. The cube is taken first as the simplest. Some preliminary questions may be given as to its properties, lines, and angles, and the first practice taken with one face parallel to the picture-plane. The model, or models, should be so placed that one side is full in view, but so that nothing is seen of the ends, the top being a little below the level of the eyes of the children. The ground-line is first drawn, and the eye-level or horizon, the former near the bottom, the latter near the top edge of the paper; for as the drawing is a simple one, and only one vanishing point is needed, the pupils will be able to shew all the lines. The height of the face of the cube is compared with the height of the eye-level by the ruler movements previously explained when dealing with the horizontal plane. This measurement fixed, the face of the cube is easily sketched, since it is a perfect square. The vanishing of the sides of the top face is next considered. They appear to meet at a point central to the face of the cube—the centre of vision.

The sides are drawn and continued until they meet at this centre. The width is then carefully estimated by the ruler held vertically, comparison being made with the vertical edges of the front face; the back line of the top is drawn, and completes the figure. This latter dimension is the only point of difficulty in the drawing, and must be carefully corrected for each individual before "lining in" is proceeded with. A study of the completed outline will show each pupil whether the top of his drawing looks flat or otherwise. This self-criticism should be encouraged, and is the more necessary where variations are caused by different views; thus, in the case of a class seated in desks on a "stepped floor," the top of the cube appears wider to each successive row of boys because of the increased height of the eye-level. An utterly wrong drawing of the cube is where one side is parallel to the ground-line, and more or less of an end is also shown. This, though correct by theoretical perspective, is an inexcusable blunder in model drawing.

Before proceeding further with drawings of the cube in other positions, revision should be made of the following principles, driving them home by smart questioning, illustrating them by practical examples, and working them out by viewing objects with the aid of the ruler for estimating distances, &c.

(1) That vertical lines always appear vertical.

(2) That they appear less and less in height as they recede.

(3) That horizontal lines appear to "vanish," so that if produced they would finally meet.

(4) That horizontal lines below the eye-level vanish upwards, above downwards—that is, they vanish to the eye-level.

(5) The consequent effects of this upon surfaces above or below the eye.

(6) That a surface only appears its true shape when the centre of vision is the centre of the surface. In all other positions the surface is more or less altered.

(2) The second practice with the cube is the drawing of the model in position, with sides making angles to the picture-plane. The method of procedure is:—

(*a*) Draw ground-line; estimate, as previously shown, apparent width of sides compared with vertical height to fix point where nearest corner touches ground-line.

(*b*) Erect vertical line from this point.

(*c*) Vanish sides, measuring and comparing the angles made by them with ground-line by holding ruler in position to represent latter.

(*d*) Estimate eye-level as in drawing the horizontal plane, and compare its distance above ground-line with vertical height of cube.

(*e*) Draw front sides of top, being careful that they vanish to the same level.

(*f*) Fix apparent width of sides by comparing with front vertical edge, and erect back vertical edges.

(*g*) Complete top surface by vanishing the back sides to the same points as the horizontal lines previously drawn.

Note that the flatness of the top must be secured by careful vanishing of these last lines, otherwise the "tilted" appearance remarked in the drawing of the horizontal plane will be in evidence. The pupils should be trained to notice where the top back corner of the cube appears over one of the front edges. This may be demonstrated by fixing one end of a piece of twine to the corner in question with a drawing pin, and allowing the pupils along a row of desks to handle the other end of the twine. As the twine is held by the right hand to the right eye of each pupil in turn, the point where it leaves the front edges can be marked with chalk. The different places where the back corner is seen are thus clearly shown, and the pupils may be trained to check their vanishing by noticing whether the back corner in their drawings is in its right position or not. If this be incorrect, the whole top of the cube is faulty. Two points must be enforced and corrected by each pupil before "cleaning out" and "lining in" his copy:—

(i.) The nearest vertical line must appear longer than any of the other lines, horizontal or vertical.

(ii.) The greater the angle at which a side vanishes the shorter that side appears; consequently, the wider one side appears the narrower the other appears, until in the view, with one face parallel, *all* of one side is seen, and *none* of the other.

(3) The cube once mastered, the rectangular prism is easily taught, proceeding on precisely the same lines. Some little care is necessary in measuring the length of the prism; most pupils exaggerate the long sides at first, and the measurements and comparisons with the vertical line must therefore be very carefully made. The same model should be practised standing on end, and a valuable exercise is furnished by arranging it with the top face above the eye-level.

(4) Following these models, such objects as a large box, a thick book, a brick, a thick tile, a drawer from the teacher's desk, or the groups built of cubes, as given in the *Illustrated Syllabus*, should be practised. They are valuable since their varying proportions will test

the intelligence of the teaching. As in other lessons in this subject, the teacher must lay down the copy line by line on the black-board as the lesson proceeds, the pupils following him in the stages, but drawing what they each individually see, not copying from the board. Two or even three models may with advantage be set up, and the teacher must pass round as frequently as possible to correct errors; the services of a pupil teacher are essential if the class is large. Early practices should be on slates, and the lines may even be ruled at first, so that attention may be concentrated upon correct vanishing and foreshortening. On paper cleanliness and a finished line must be insisted upon, corners especially being clean and sharp, and all lines rigidly straight.

7. **Simple Circular Models.**

(1) Circular models should be introduced by presenting a circular hoop before the class. Viewed when held in a vertical position, and parallel to the picture-plane, this appears as a full circle. Allow as many pupils as possible to test this, by varying the position of the object so as to face different boys in turn. Then allow the pupils to view the hoop from left or right, or turned at an angle to the picture-plane, and train them to notice that the width of the hoop is foreshortened until, when only the edge is seen, it appears as a straight line. They must be led to observe that one diameter of a circle, the vertical one, never alters, the horizontal one varies from its full length to nothing. Similar practice should be given, and similar results deduced, with the hoop held horizontally at different levels above or below the eye. Define the figure formed by the oblique position of the circle as an ellipse, and carefully practise the drawing of it. This is simple if the major axis be drawn first, the minor one at right angles to it, and the points of these axes joined by curves. It should be noticed that the curve of the ellipse is continuous, not broken where the extremities of the axes lie, and that the minor axis does not bisect the major, but that the part beyond the latter is always slightly longer than that in front; that is, the major axis does not exactly coincide with the diameter of the circle. When some facility has been acquired in the drawing of the ellipse, the circular models may be commenced.

(2) The simplest of these in the simplest position is the cylinder placed upright below the level of the eye. A rectangle is drawn, the sides of which represent those of the cylinder and the major axes of the ends, comparison having been made of height and width by means of the ruler as previously taught. The width of the ellipses are next estimated. It is noted that the lower one is wider than the upper,

and they are drawn in full, the part not seen being erased before "lining in." This exercise should also be taken with one end of the cylinder placed above the eye-level; neither ellipse is then seen fully.

(3) The cylinder on its side. If parallel to the picture-plane the drawing is that of a simple rectangle, and is hardly worth more than a passing reference. If inclined to the picture-plane the drawing demands careful observation. A common but bad method is to draw a rectangular prism and block the cylinder out of it. This gives a correct drawing in one case only, when the long axis of the cylinder is on the eye-level, and consequently the sides make equal angles with the major axes of the end ellipses. Adopt the following method, following the scheme previously taught in connection with the cube to obtain ground-line and eye-level. The teacher's drawing should show the line of the latter, and the pupils should continue their vanishing lines to the edges of their slates or papers. Then, by a rough comparison of length and height, decide where the bottom of the nearest ellipse touches the ground-line, mark this point, and estimate, by means of the ruler held so as to coincide with the ground-line the angle made by the major axis of this ellipse with the ground-line, as also its height compared with the eye-level. Draw this major axis. Estimate the angle made by the bottom long side of the cylinder with the ground-line, and draw this as long as possible. Draw the top long side from the top of major axis, vanishing it to meet the lower side at the eye-level. Estimate the length of the cylinder as compared with the apparent height of the end in the usual manner; mark this off, and draw the major axis of the back ellipse; it is parallel to that of the front one. Through the central points of the axes of the end ellipses draw the main axis of the cylinder. If the drawing is correct this will vanish to the same point as the sides. Accuracy in these lines must be secured before any further steps are taken; in fact, to draw these four lines correctly will be found ample work for one lesson. The next lesson should cover this ground rapidly, then the lengths of the minor axes being estimated, the distances are marked on the main axis of the cylinder with which these lines coincide. Note the different widths of the ellipses, and that the straight sides are tangential to them, and do not necessarily touch them at the extremities of their major axes. The greater the angle the length of the cylinder makes with the ground-line, the further from the latter points do these lines touch.

These practices should be continued to include views where the angle with the ground-line becomes greater and greater until the main axis is at

right angles with the picture-plane; the general plan of lesson sketched will suffice for all cases.

8. **The cone.** (i.) In its simplest position, with main axis vertical, the cone is easily blocked out from the cylinder in the same position; in fact, it is a good plan to teach the two models consecutively so far as this position is concerned. Care must be taken to make the oblique lines representing the sides perfectly straight, and tangential to the ellipse representing the base.

(ii.) Lying on its side the cone presents some difficulty; the simple position where the main axis is parallel to the picture-plane, and nothing is seen of the circular end, should be considered first. It is unnecessary to trouble with an eye-level line. The ground-line should be drawn as in previous models, and the point where the extremity of the base is fixed. A very careful estimation must be made of the angle that the base, which appears as a straight line, makes with the ground-line. The base is then drawn, and, from its middle point, a line at right angles to represent the main axis of the cone. This line for this position will terminate on the ground-line, and for every position it will be at right angles to the axis. Having thoroughly understood this drawing, the pupils may proceed to draw the model with its axis more and more inclined from the picture-plane. The base will come into view as an ellipse, the minor or shorter axis of which will cross the longer or major one at its centre as a prolongation of the main axis, as in the case of the cylinder. Note:

(*a*) The sides of the cone are tangential to the elliptical base, touching it further from the vertical points the greater the angle made with the picture-plane.

(*b*) That in common with all the circular models, the wider the base appears the shorter is the length. The positions should be varied until the axis is at right angles to the picture-plane, the apex turned away from the spectator. This view presents an ellipse with the horizontal axis slightly longer than the upright one, almost, in fact, a circle; it is seldom needed, but it is useful as a final position. In demonstrating on the black-board, the teacher may with advantage place a model so far to the right or left of the class that all the pupils obtain, approximately, the same view of it, and the black-board drawing represents sufficiently for teaching purposes what they *all* see.

(iii.) Circular objects should be taught in connection with the model on which they are built; a large stone jar or a jam pot are analagous to the cylinder; a flower pot is practically a truncated cone, and when lying on its side should be drawn as a full cone, and the part not needed erased when the length seen is fixed. Simple objects, suitable to Standard V.,

will be found to ally themselves more or less with the models taught as previously indicated; but those such as jugs, cans, or pails having handles, need special teaching. Pains should be taken to secure the best guide lines, and in drawing handles the thickness must be carefully shown to secure the requisite appearance of solidity. To this end the lines representing the upper and under surfaces must not appear to cut one another. When, as is usually the case, the handle and spout of an object are in a straigh line, correctness should be ensured by drawing a guide line between their positions. Vases are required by the Science and Art Department, and the forms are stipulated. They are of simple, graceful outline, but must be carefully taught, as the guide lines are somewhat elaborate. It is usually best to build them around a rectangle rather than a single central line, and care should be taken to secure exact proportions, not only of length to breadth, but also of neck to body.

In addition to the ordinary models and the vases, the teacher should be prepared with six common objects. The following are used in a school which has always secured the highest award in this subject. A drawer, a large book, a stone ink-jar, a *large* flower pot, a cup and saucer, and an ordinary zinc pail. Others equally suitable would be, a toilet-jug, a bell, a saucepan, a watering can, a large glass bottle, and a teapot; but simple ones should be chosen, as the work of teaching the models alone makes a heavy demand on the time of the standard. The slate taught in connection with the horizontal plane should be elaborated, and used in conjunction with the cylinder or cone placed upright upon it. In these, and in all cases where a slate, board, or table top, supporting a model or group of models has to be drawn, it is decidedly best to draw the supporting surface *last*. In all cases the teacher should privately practise the model to be drawn on the black-board, before attempting to give the lesson. He will then be sure of the best size and position for it, and the lesson will run smoothly; the pupils must present a finished copy as large as the paper will allow.

9. **The hexagonal prism.** (i.) This is usually the first model attempted in Standard VI. It should not be set to Standard V., for it is not a rectangular model. A hexagonal surface should be sketched first in three positions.

(*a*) Vertical and parallel to the picture-plane.

(*b*) Horizontal and below the eye-level.

(*c*) Vertical, and at an angle to the picture-plane. A large hexagon, being constructed on the black-board, geometrically, and the opposite corners joined, the pupils construct the same figure. It will be found that the space enclosed on the longer diameter by the shorter ones is equal to the sum of the outer parts of the former. The alteration of

these spaces, when they make an angle with the picture-plane, must be most carefully observed ; the nearest space is the least foreshortened. This point must be dwelt upon, as its correctness is essential to the vanishing of the sides. The six sides in this case vanish in pairs, two only to the eye-level. The pupils should continue the sides to the edges of their papers in the earlier lessons to ensure their true direction. To draw the hexagonal surface, spaces should be carefully estimated, and a rectangle drawn enclosing them. Then complete the hexagon by joining the ends of the diameters.

(ii.) Having mastered the drawing of the hexagonal end of the model, the pupils may next deal with it standing on end, with its main axis vertical. The method of drawing the hexagon in a horizontal plane is followed, and vertical lines drawn from each corner, care being taken to make those further from the eye rather shorter than those nearer to it, but to make them rigidly equal in pairs. The upper extremities of these lines when joined give the top face of the model. A useful exercise is formed by placing the model in position with this face above the eye-level.

The prism, lying on its side, with the long sides parallel to the picture-plane, gives a simple rectangle crossed by two parallel lines, nothing of the end being seen. The prism, lying on one side, with its main axis at an angle to the picture-plane, is drawn by first securing a correct representation of the end, as in position *c* previously referred to. This done, the rectangular frame, drawn to contain the hexagon, is treated as the end of a rectangular prism, and the whole prism sketched. In this outline, the hexagonal model is drawn. The greatest care is necessary to secure the accurate vanishing of the lines ; they must not only vanish in pairs, but the pairs at one end must vanish with the corresponding ones at the other. All the long sides also vanish to one point, and, as in the cube and rectangular prism, this must be on the same eye-level as that to which the corresponding lines on the face vanish. It is well to revise and reproduce the rectangular prism when dealing with this model, as there are several points of similarity. The hexagonal prism enters into so many groups of models, that it should be thoroughly taught; so many principles are involved in its drawing, that it is well worth time and trouble.

10. **Groups of models** usually comprise one involving the drawing of curved, and one of right lines. Two models or objects are usually set, and sometimes three. No fixed rule can be laid down as to which should be drawn first ; the pupils must be trained to exercise their own judgment. In almost all cases the whole of each model must be drawn, and the hidden parts erased before lining in Very frequently the board or table top on which the model stands is included in the exercise. In this case two faults must be most carefully guarded against.

(i.) Making the board too wide. This must be guarded against by noticing where its back edge appears to cross the vertical sides of the upright model.

(ii.) Drawing the board, with one side parallel to, and the other at an angle to, the picture-plane.

Many pupils are careless over the lines indicating the thickness; these are, of course, rigidly vertical. It is sometimes an advantage to draw first a rectangular frame to contain the group, before beginning the models, making the highest line touch the top of the frame, and the furthest to the left and right, their respective sides; the various dimensions can then be well compared, especially the width of the board and the height of the upright model. In all cases draw the supporting surface last. The following groups are typical, and should be thoroughly practised.

(*a*) The three given in the *Illustrated Syllabus*. The small match box in Group 1 needs care, and the placing of the teaspoon in the cup in Group 3 should be accurate. The whole spoon, or at least its central line, should be sketched. In drawing the book do not indicate too many separate leaves.

(*b*) A small vase standing on a cube.

(*c*) Hexagonal prism with a book leaning on it.

(*d*) Water bottle or tumbler standing on a book.

The combinations are endless, but the general plan is to combine models of different outlines. Finally, it must be remembered that the group presents more marked differences from different positions than a single object does. The teacher should correct the exercises from the exact point of view of the scholar, otherwise he may easily be misled.

Freehand. I. **Difficulty of the subject.** This branch of drawing presents many obstacles, only to be overcome by thoroughly good teaching, simultaneously from the black-board, and individual in its attention to the unit scholar. The eye must be trained to keen observation and to a close accurate estimate of form. The intelligence must be developed, that exercises may be worked by the most advantageous methods; and the hand must, by practice, acquire the power of drawing accurate lines, straight or curved. These powers are only to be attained by slow and steady steps; they must grow with the physical growth of the pupil, and must be cultivated from the earliest possible age.

Freehand drawing, in a crude form, exists in Infants' Departments, and its steady progress is necessitated if the requirements of the various standards

are to be met. Thorough work in the earlier years is indispensable; if good foundations are not laid, the subject becomes as distasteful as the results are unsatisfactory in the upper standards. The remarks previously made on the quality of materials are to be borne in mind. Paper of such a consistency as to bear the india-rubber without losing its surface, H pencils of good quality, and india-rubber are essentials. Slates and pencils are required in Standard I. All materials must be kept in good order, and should be ready when needed.

II. **Main principles.** Drill the pupils in the right way of sitting—upright, square to the desk, the left hand steadying the slate or paper, the pencil held some distance from the point, the fingers grasping it; but the hand turned so that the thumb is upwards, and the wrist so free that a line of considerable length can be drawn by one continuous movement. This should be dwelt upon, for a wrong way of holding the pencil is an absolute hindrance to good work, and difficult to correct after being once consolidated. Copies are first sketched in with light lines, and finally, after careful criticism, erased to the point of deletion, and lined in by clear, distinct, and continuous lines—not black, or heavy, or broken in the slightest degree. Skill in drawing lines of some length in one movement, the points of direction being previously determined, must be gained by constant practice. It is sometimes well to carry the hand several times over the proposed path with the pencil point some distance above the paper, before making the actual line. The use of the india-rubber is liable to many abuses, and in the earlier practices it may, with advantage, be prohibited. Pupils are tempted to indulge in careless strokes by the ease with which they may erase them. Forbid the rubber, and more care is ensured. It is needed before "lining in," and its use must be carefully taught. Sketch lines should never be too heavy to be easily erased. The rubber should be passed lightly over them in one direction only, not carried back along its own path, lest creasing ensue or the paper be rubbed into holes.

III. **Essentials of a freehand drawing.** 1. *Construction lines.* These are very necessary in the earlier years in all but the simplest copies. Later on they may often be replaced by slight

marks, made by carrying the pencil across the paper without drawing a continuous line. They should be very light, for they must leave no traces in the finished copy. The most common one is the central upright line of balanced copies; this is drawn first, of a size proportionate to the intended drawing. If the latter be made from a large sheet, the line should be so long as to ensure the exercise being as large as the paper will allow, leaving sufficient margin for appearance sake. This central line is frequently divided into two, three, or four equal parts. Although no construction lines may be required through these actual points, some division is useful to estimate positions. The division into two or four parts can be judged by the eye alone after a little practice, and three equal parts can be gauged by placing the pencil point and the fore-finger of the left hand simultaneously on the line to be divided. Children must be taught to find their own construction lines by oral questioning, on a copy placed before them; in fact, after a little progress has been made, the teacher must elicit the best plan of proceeding as to number, position, and order of these lines. They are not given on examination copies, hence the necessity for this training.

2. *Balance.* The great majority of freehand copies are divisible into two parts, equal in size and alike in outline. To secure this equality, the child's drawing must be correctly balanced. This is done by drawing a selected portion on the left side of the central line, and immediately repeating it on the right. The right-hand portion must not be drawn first, or it will be hidden by the hand whilst the other side is under construction; neither must the whole of one side be completed before the other is attempted, or faults in proportion will appear. Construction lines are the great aid in obtaining correct balance, but the eye must be trained to work independently of them as skill is gained. Not only must position, such as points of similar curves be balanced, but also masses, such as leaves or petals of like outline. The lengths, breadths, and total areas of these must be alike on either side of a symmetrical copy, as also the spaces by which they are separated from

other portions of the figure. Careful observation and accurate judgment are the only means of securing correctness in this essential. Copies are frequently shaded in colours to aid the eye in making comparisons. Some figures of simple outline are exceedingly difficult to balance, because of the absence of definite points by which the relative masses may be gauged. Numerous construction lines are necessary unless the eye for form is good; and some unsymmetrical figures, such as the large plum, frequently set to Standard III., and the square-shaped bottle used for Standard IV., present obstacles to correct drawing, because of the same difficulty of comparison.

3. *Radiation.* In many freehand copies, curves meet and join. These are almost invariably tangential, that is, the curves flow or radiate from one another, and the beauty of the figure depends very much upon the correctness of this feature. On no account should such curves be drawn so that, if produced, they cut those from which they should radiate. The children must be trained to observe this important point, which is best secured in the earlier stages by drawing *from* the main curve, a small portion of the subsidiary one, and completing the latter to join this. The simple balanced copies for Standard III., given in the *Illustrated Syllabus*, are good examples of tangential curves. In the first few practices the pupils should produce the curves, and if incorrect in this particular, they will be found to cut instead of flowing along the main line. Some sets of published drawing cards are very faulty in this respect.

4. *Proportion.* To correctly estimate sizes in freehand, the pupils should be trained to use the lead pencil, as directed for model drawing, and to compare one line, mass, or distance, with another, as they proceed. If this is not done, the exercise will be faulty in proportion; careful training is very necessary, and this is a further argument for slow and thorough work. If not well watched, some members of the class will draw a few lines after comparison, and then insert the others at random. Less comparison is necessary as they acquire skill, but it is better to err on the side of

excess in this respect. Faults, such as inaccuracy in the relative thicknesses of stalks in floral copies, mistakes in the proportion of the various petals constituting such figures as the conventionalized honeysuckle and the like, are due to neglect in this respect. Pupils fall into excusable errors if the copy is placed before a large class, so that those sitting at the sides view it from the right or left. In this case, the width of the copy is diminished in proportion to the height, owing to foreshortening. Two or more copies should always be provided for large classes. It may be pointed out that balance refers to the like parts of the copy, proportion lies between different parts; thus, in such a copy as a simple vase, correct balance would necessitate exact resemblance in the curves composing the sides. Proportion would enact that the width of the vase was the correct fraction of the height, that the neck was the same proportionate width, and that the widest portion of the vase lay in the same position with regard to the whole figure. Faults under this head are caused by a system of copying bit-by-bit, instead of taking a broad view of the drawing, and striking out the main features boldly at first. These correct, details are easily added. In this stage remember that mass and mass, space and space, must be compared, not merely line and line.

5. *General Plan of the Subject.* In Standards I. and II. the Department recommends "the freehand drawing of bold curves"; these may well be added to the various squares and oblongs drawn in connection with the ordinary freehand and ruler work of these standards.

The essential point is to secure such a method of holding the pencil that sweeping lines are drawn; on no account should a finnicking style of drawing a curve by small steps be allowed. Practice may also be given on squared paper, and here, especially, care will be needed to prevent the growth of a habit of drawing short lines. The direction of the curve being decided, it must be drawn with a continuous stroke.

Standard III. proceeds to balanced figures on paper. These are fairly easy if drawn to a central line, and construction lines inserted; radiation and balance must be correct.

Shields furnish a favourite series of exercises for this standard. These call for exact proportion of width to height, and close observation is necessary to secure the exact shape, as some of the examples are almost alike in outline. Freehand representations of a plum, a trowel, a bell, or a vase are often given ; and these give perhaps most trouble, as the very simplicity of outline renders the necessary comparison of parts a matter of difficulty.

Standard IV. advances on the same lines ; the balanced copies increase in complexity, and different combinations of the spiral call for careful teaching, as a somewhat complex construction is necessary.

In many of the copies a much simpler outline than the finished copy presents should be sketched first. Correct proportion is thereby secured, and details are easy to add. Thus, in drawing the ivy leaf, the main stem and radiating veins of each lobe should be drawn, the points of the re-entrant angles of the leaf marked, and the outline finally completed. Objects of some difficulty are frequently set to this standard. A sectional view of a kettle, with a somewhat elaborate handle and lid, tests the pupils' powers of using construction lines ; in this case the figure needs to be drawn in a rectangle divided into spaces to contain the handle and body, the spout falling outside. The spoon, hatchet, handbell, and similar copies, consist of definite parts, such as handle, stem, and bowl, handle and head, &c., and these will need care to secure due proportion.

The copies usually expected from Standard V. fall under the same groups as the more advanced in Standard IV.

A conventionalized water lily—a wide copy, consisting of two horizontal petals, and a central mass of stamens springing from a comparatively small stem—is the most advanced. The proportion is peculiarly difficult to obtain, and it forms a valuable exercise in consequence.

A fig-leaf and stem is somewhat awkward on account of the irregularity of the various parts. The veins should be drawn first, the angles at which they diverge being carefully observed, and the lobes sketched around them, the various masses being carefully proportioned.

An outline glue-pot and a bucket, often given, need construction lines to secure correct placing of the handles ; the points of attachment of these should be marked, and joined by a straight line from which a central perpendicular springs to mark the highest point of the curve of the handle.

A freehand model drawing of a garden roller is issued with some sets of copies for this standard, but is far too difficult ; the details of the junction

of the handle with the axle are too small to be observed by the class from the usual distance, and the correct position of the handle is also anything but easy to secure. The copy may be worked through as an exercise, but is too severe a test for examination purposes.

In Standard VI. floral designs are introduced. Those involving the drawing of the acanthus leaf should be drawn in plain outline, and the necessary points being marked, the details cut, as it were, out of the block thus provided.

Natural flowers in outline, such as the tulip, narcissus, and passion flowers, are often given. The exact curve of stem, leaf, and flower, should be carefully secured. Thickness has often to be shown; the method is identical with that used in the drawings of jug handles referred to under model drawing. Outline objects, such as a chair, and an anvil and block, included in this course, furnish good tests for skill in proportion. The chair should be sketched in simple outline to secure the due length of legs and back, and may with advantage be drawn out of a solid rectangle. The thickness of the legs and the curve of the back need to be accurate. The anvil and block should be carefully worked through; they must be correct in proportion to one another, and the vanishing of the lines forming the short sides must be correct. The holes in the anvil top, the short vertical lines showing thickness, the thickness of the hammer-shaft, and correct shape of the head, all need careful supervision. This is a most useful exercise, which will well repay repeated practices throughout the year. It is a good plan, after working a difficult copy until fairly mastered, to leave it for a month or two, and then repeat the practices. These instructions by no means imply that copies should be crammed off, for in all cases the pupils must be led to find their own construction lines, and to observe the various points of the drawing.

Standard VII. is expected to cope with floral copies of considerable complexity, and to show skill in striking out main lines.

A full hour is often none too long for the mass of detail frequently necessary. Vases of difficult outline, with ornate handles and designs on their surfaces, should be practised. One with a fluted portion needs a construction below the base line, similar to that necessary in the solid geometry of circular solids, to secure the true size of the flutes on the curved surface. A piece of foliage forms another exercise. The edges of serrated leaves should be drawn plain first, and the serrations afterwards made. Care must be taken to secure the natural graceful position of the leaves, as

In all the standards practice should be given in enlarging or reducing outlines from cards distributed to individual scholars, as well as in drawing from a large sheet hung before the class.

Light and Shade is an alternative subject in Standard VII. It cannot be dealt with within the space of this manual, and should only be taken in those cases where the teachers have acquired considerable skill in drawing. The materials are somewhat expensive, and the difficulties of procuring a correct distribution of light in ordinary schoolrooms often insuperable; added to these, geometry is of a much greater practical value.

In conclusion, the necessity for clean finished copies must be impressed. "Line," as it is technically termed, is an important factor. Its due excellence must be kept steadily in view all through the course. Increased skill is expected as the standards rise. Some practice in working against time will be necessary, and also, if possible, some tests in previously "unseen" copies. All the branches must be *taught*. To set the pupils to do a copy, while the teacher employs himself in some other duty, or lounges round the class sharpening leads, is a highly reprehensible waste of time. No subject calls for more careful teaching, and none is more interesting to all parties concerned if properly dealt with.

KINDERGARTEN.

I. **History of the System.** *Pestalozzi.* The method of educating young children, now universally known as the Kindergarten System, was primarily originated by John Henry Pestalozzi, a Swiss, who lived from 1746 to 1827. His early years, spent with his grandfather, a village pastor, gave a strong religious colour to his whole life. He toiled at his great work in spite of enormous difficulties, due in part to political changes, but not a little to his lack of administrative power. His theories, excellent in themselves, were often discredited through his inability to carry them to a successful issue. Fired with a noble desire to raise the tone of the peasantry of his native state, he commenced at an early age to teach a school composed of a number of the poorest children of the district, whom he received into his home and treated as his own. He combined farming with his work of school-keeping, and employed the children in the garden and fields in summer and in the house in winter. He associated oral instruction with manual work, and the experiment, judged from an educational point of view, seems to have been a complete success. Most unfortunately, his want of economic ability, and his too sanguine disposition, led him to endeavour, prematurely, to enlarge his establishment. Bankruptcy followed, and though his friends assisted him generously, his life for eighteen years was one continuous and heart-breaking struggle to secure ordinary necessaries. He produced some excellent literature in the shape of pamphlets on education, and edited a magazine to give publicity to his ideas. Repeated experiments with schools in various parts of Switzerland met with little success, owing either to monetary

difficulties, to the opposition of the Roman Catholic clergy, or to the disturbances incident upon foreign invasion.

Nevertheless, Pestalozzi attracted many disciples who, influenced by his genius, and possessed of a larger proportion of practical knowledge, carried out his principles so successfully that they now permeate and sway the whole educational world.

His Methods. The keynote of Pestalozzi's method is that behaviour is of more importance than knowledge. He would deal with the child at a very early age, and lay the foundation of good morals. He was a strong advocate of manual training, but often exceedingly unpractical in the schemes he formulated; for he put children to advanced work before they had acquired the necessary dexterity through elementary exercises, expecting them, for instance, to weave muslin before they could make coarse cotton goods.

His argument was that education should consist of a benevolent superintendence, and he firmly enunciated the principle that it must conform to the natural process of mental evolution; but he was ignorant of the most elementary principles of psychology, and therefore often radically wrong in carrying this theory into practice. Despite these failings, Pestalozzi implanted in the minds of his successors a recognition of the necessity of developing and guiding, rather than suppressing, the innate activity of the child. He founded his system upon love, for he was of opinion that our hearts and affection sway our actions far more than our intellects do. Lead the child to love that which is noble and good, to fix his affections upon proper things, and his life becomes truly moral. Develop the intelligence alone, and the evil inherent in human nature is armed with better weapons to work its ends. A strong religious element runs through Pestalozzi's teaching; he would train the child to pray, to think, and to work. One of his commentators states his aim as follows:—"Not the acquisition of knowledge or skill is the main object of elementary instruction, but the development and strengthening of the powers of the mind."

Frederick Froebel, who lived from 1783 to 1852, was the actual founder of Kindergartens, and formulated, in a systematic form, the course of instruction associated with these institutions. He was a student under Pestalozzi, and succeeded in completing his system by a thorough and careful investigation into the mental development of man. He opened his first school in 1837, and called it by the name now so closely associated with his own—a "Kindergarten"—"Garden of children." He urged the need for such institutions in a weekly paper which he edited, as well as by lecturing in the larger towns of Germany, and he also trained young teachers in his system. Like his predecessor, he suffered much from poverty and the opposition of political parties; and the latter years of his life were embittered by a government edict which forbade the establishment of schools on his principles, in Prussia, on the ground that his teaching was socialistic; nevertheless, founded as it is now acknowledged to be upon the natural development of the human intellect, the system of education arranged by Froebel and known as the Kindergarten system has spread throughout the whole civilised world, and finds exponents in the ranks of the most highly qualified educationalists of the day.

II. **Scope of the subject.** Kindergarten teaching, as generally understood, is usually applied to Infants alone, though the now extended use of Manual Instruction in the form of "Suitable Occupations" in the various Government Standards amounts to an extension of the teaching to schools for older children. It must, however, be borne in mind that the great arguments in favour of Kindergarten teaching apply only to the Infants' Department. Thus, it provides means of usefully and pleasantly varying the school-work of the youngest children; older ones do not need such variety, their tasks are more serious, and they are able to maintain a sustained attention for longer periods; it teaches through games, and is practically an organized system of play. This is out of place, and a waste of time in higher standards; it develops the powers of observation, but leaves untouched

those of reflection, important elements which cannot be neglected as the child advances. The highest authorities have fixed the limit of the Kindergarten age at seven years, and have strongly deprecated a continuance of its methods beyond that time. It must be allowed that these are limits to the usefulness of the methods rather than faults of principle. As a concrete illustration, it may be instanced that the weaving of paper mats and similar useful occupations are educational in themselves; but not such employments as should occupy the child when its powers can be better applied to the production of forms on paper, as in elementary drawing lessons.

III. **Practical details and methods of teaching.** The requirements which Froebel demands for a "Kindergarten" are, for many reasons, pecuniary, and otherwise absolutely beyond the elementary school. A large airy building, standing remote from the noise and bustle of town streets, adjoining a garden, in which the children cultivate small plots, the establishment limited to twenty children, and heavily staffed with highly qualified teachers, is the direct opposite to very many schools where the system is, nevertheless, successfully worked. The various objects—called by Froebel, "gifts," are essential, as also special flat-topped desks, with a network of lines engraved on their surfaces to guide the children in placing the various materials used, and a table similarly ruled for the use of the teacher. The gifts are alluded to in detail in the following section; a review of the principles which should guide the instruction is presented here. No one should attempt the instruction without first mastering the course as a whole for the interdependence of the various "gifts," and the gradual evolution of the exercises should be clear to the mental vision of the teacher from the earliest stages.

The gifts and the exercises, or "plays," based upon them progress from simple to complex, from known to unknown. What is taught in one is made the base for the introduction of the next; there is no break in the continuity, and the stages are graduated with the utmost care, so that no excessive demand is made upon

the powers of young children in passing from one to the other. The gifts are presented and handled in such a way as to call forth and inculcate habits of politeness, of neatness, and of rigid accuracy; nothing is acceptable but the strictly correct way of using each, and no departure from the orthodox drill is permitted. The various forms produced with the third and following gifts are classified as :—

1. Forms of life.
2. Forms of knowledge.
3. Forms of beauty.

1. Represent in a more or less crude way, actual objects which come under the everyday observation of the children.

2. Give a basis for teaching number, order, and proportion.

3. Represent ideal forms of regular construction, and teach symmetry and order in the arrangement of parts, developing a love for the beautiful, and sowing the seeds of artistic tastes.

The gifts progress from the solid whole to its parts, from the actual building up of a simple object to its image on a plane surface, and, finally, to its representation by line and point.

Practically the child *draws* with solid bodies, that is, three dimensions; then with plane ones, *i.e.*, two; then with lines, *i.e.*, one; and finally points, *i.e.*, position only. From building blocks of wood, he progresses to the more flexible material, paper; the plane first, as in folding, and then the strip (line) in weaving. The wooden staff or thin wire is next used to represent lines, and peas to indicate points and to enable permanent models to be produced. Finally the pencil is used in drawing, and colouring is introduced. Perforating and embroidering bring artistic and beautiful forms to the notice of the child; and paper cutting and mounting yield exercises in design tending to cultivate originality and an appreciation of colour combinations; while modelling in clay or wax gives a further exercise in creating form. The occupations are varied, and enlivened by the introduction of songs, movement plays, gymnastics and dancing, which are valuable aids to physical development. In every direction the mind finds its starting point in *concrete* things, and, in short, the true "Kindergarten" exactly fulfils the requirements of the science of Education as now understood—" all ideas are founded upon previous perception derived from real objects."

The ordinary playing of children cannot form a substitute for the carefully organized occupations provided by this system. The former leads to no definite end; it merely passes the time in a more or less harmless way;

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The ordinary playing of children cannot form a substitute for the carefully organized occupations provided by this system. The former leads to no definite end; it merely passes the time in a more or less harmless way;

no results are evident, and no incentive appears in the shape of permanent objects made by the child itself. Froebel's system presents the right materials at the right time and in the correct order; the mental powers find exactly the occupation they demand, and are prepared in the best possible way for the demands made upon them as years advance.

IV. **The Gifts.** These are altogether twenty in number, according to Froebel's classification, but the term is now usually applied to the first six only. The following brief summary must, of necessity, be treated as merely supplementary to the full details given in manuals especially devoted to the discussion of this system. It is not essential that all the gifts should be taken, as after the first six some of the remainder may be so fully developed as to provide full employment to the exclusion of the others.

1. The **First Gift** consists of six rubber balls, worked over with worsted, to represent the three primary and the three secondary colours. A special drill is used in the handling of the bodies, courtesy is taught by training the children in a proper style of answering, and the powers of observation are developed by requiring them to describe the shape, colour, and other properties of the bodies, as they handle them, as well as to refer to other objects having like qualities. Furthermore, much practice is given in the use of the hands, to the end that the right hand may be readily known from the left. Many lessons or "plays" can be given with this gift alone, and progress should be gradual, so that it may be thorough.

2. The **Second Gift** introduces a sphere, a cube, and a cylinder of wood. From their knowledge of the balls acquired during lessons on the first gift, the children readily recognize the sphere, and are able to contrast and compare it with them. Progress is then made to the cube. Its form, sides, and angles are discussed; and, finally, the sphere and cube are contrasted with the cylinder, so that points of resemblance and difference may be noted. As a last exercise, the several objects are suspended from a double thread, and rotated in turn. The sphere is observed to be unchanged in form; the cube may form a cylinder if suspended from the centre of one of its sides and turned rapidly. Similarly the cylinder hung from the centre of one of its round sides gives the sphere. Other forms are obtained by using other points of suspension, and the exercise becomes most instructive, if accompanied by suitable conversation on the part of the teacher.

3. The **Third Gift** consists of a cube divided into eight smaller and equal cubes. The natural desire of the child to separate a whole into its parts

is satisfied, but it is also able to combine the parts into a whole; so ideas of "whole," "part"—and as building is possible—form and comparative size are generated. The use of such terms as above, before, below, behind, right, left, &c., can also be taught, as corresponding movements are made with the cubes.

With this and all the following gifts, the forms referred to in the previous section can be produced.

(*a*) Forms of Life are built, using more and more cubes as skill is acquired until the whole eight are employed. A great number of simple objects can be constructed, in a way sufficiently satisfactory to the child, such as chairs, walls, columns, crosses, bridges, rows of trees, stairs, &c.

(*b*) Forms of knowledge are used to teach addition, subtraction, and even elementary fractions; but the exercises must be graduated to the ages of the children. These forms are taught by presenting the gift in a box, which, when removed carefully, leaves the eight cubes as one; and the exercises of separating and adding together the cubes should be so arranged as to give the same form at the finish.

(*c*) Starting with a simple arrangement of two cubes lying on the flat, forms of beauty are constructed, involving finally the use of all the eight bodies.

Symmetry is arrived at by accompanying a change of position made on one side by a corresponding movement on the other. The forms are all one block only in height, and represent outlines of surfaces. An infinite variety is possible; the regularity of outlines satisfies the eyes and fosters artistic tastes. The ruled surface of the desk affords a ready means of ensuring the accurate placing of the blocks.

4. The **Fourth Gift** gives further variety for purposes of construction. It is a cube divided into eight equal *oblongs*, of the following relative dimensions—length, twice width and four times thickness. These varied dimensions enable length, breadth, and height to be taught without confusion of terms. As in the third gift, the whole cube in its box is presented first, and shown to be similar in form and size, as also in the number of its parts, to the one previously examined. Some discussion ensues as to common objects of oblong form.

(*a*) Forms of life, as a long wall, a gate, a sofa, an arch, a table, &c., are easily constructed.

(*b*) Forms of knowledge involve reference first to the whole cube. Some considerable exercises in observation are then given relative to the dimensions of the sides; and addition, subtraction, and the comparative values of the simpler fractions, halves, and quarters can be further illustrated by combining and separating the oblongs.

(c) Forms of beauty of greater complexity are now possible, owing to the variety of dimensions of the parts; and these may be evolved from an initial form, consisting of all the oblongs laid as a square tablet. Star-shaped figures and regular polygons, as well as patterns involving a variety of crosses are possible, and highly interesting if thoroughly and carefully taught. Further changes may be made by turning the oblongs on to their edges.

5. The **Fifth Gift**, following the principle of proceeding from known forms to similar ones of greater complexity consists, like the third and fourth, of a cube, but in this case it is larger, and divided twice in every direction. Thus it is separable into three equal parts, each consisting of nine smaller cubes of equal size, in all twenty-seven pieces. Furthermore, to introduce oblique lines to the mind of the child, three of the twenty-seven cubes are divided diagonally into half cubes, and three others similarly into quarter cubes, leaving twenty-one whole cubes, and giving altogether thirty-nine single pieces. They are so packed in the box, that all the halves and quarters are in the bottom row to permit of the placing of the whole cube on the table, preparatory to the removal of the box, and the subsequent separation into parts in the various ways required. It is at once obvious that more complex and varied forms of life can be produced with this gift. The half and quarter cubes are particularly useful in such objects as houses, churches, &c., where roofs are represented. Some very elaborate monuments can be constructed, but care must be taken not to sacrifice accuracy of placing and ease of manipulation to an ambition to construct difficult forms. Similarly a limit must be fixed in the construction of the forms of beauty, for thirty-nine pieces admit of some thousands of combinations. The broad lines to work upon are :—

(i.) The form must have, and be built around, a definite centre.

(ii.) It must be symmetrical, *i.e.*, the opposite sides or parts must balance.

Forms of knowledge follow the lines of those previously presented. The division of the whole cube into its parts is first taken. Simple exercises in addition and subtraction are worked as before, but greater facility is given by the increased number of pieces which admit of parts being represented as vertical or horizontal oblongs. Moreover, the division of individual cubes into halves and quarters readily allows of useful teaching to the end of a thorough comprehension of the relative sizes and values of these parts with the whole. The third and fifth gifts are related in their uses and properties as are also the fourth and sixth.

6. The **Sixth Gift** consists of twenty-seven oblong blocks or bricks, individually of the same dimensions as those of the fourth gift. Of

these, eighteen are whole, six are divided into equal square slabs, and three into equal oblong ones; the former, by a cut across the breadth of the primary slab, the latter by a longitudinal partition. Forms are constructed as in the preceding gifts, but the relation between the cube and oblong is now fully taught. Forms of beauty are varied by placing some of the oblongs in a standing position. The forms of knowledge are scarcely so varied as with the fifth gift, owing to the absence of oblique surfaces and their consequent angles. Repetition under varying conditions is, however, possible, and previous knowledge is rendered more certain without the fatigue due to the monotony of repeating the same thing in precisely the same manner and form; and what is of more importance, the child recognizes like in unlike, similarity in dissimilarity, oneness in multiplicity, and connection in the apparently disconnected.

With this gift ends the first stage of the Kindergarten exercises. The child has become acquainted with the general properties of the gifts presented to it by its own observation and handling of them.

The **Seventh, Eighth, and Ninth Gifts** furnish distinct steps from the concrete to the abstract. In place of making actual forms of life readily recognizable and usable as such—*e.g.*, a sofa, on which a small doll could be placed—the pupil now represents the outlines of objects only. The connection must, however, be carefully preserved, and each new gift introduced by reference to the corresponding forms previously constructed.

7. The **Seventh Gift** consists of small tablets, square and triangular. The quadrilateral ones are used first to the number of six, which are laid on the sides of the cube. The child is led to recognize the relationship between these new bodies and those already familiar. After considerable discussion relative to the properties of the sides and angles of the tablets, in which the terms horizontal, perpendicular, and right angle are used, forms of life are constructed. The tablet, divided into two right-angled triangles, is next introduced, and its special shape made familiar; particular attention being paid to the oblique side and the acute angles. The child then proceeds to construct various forms of life, using four, eight, sixteen, or thirty-two triangular tablets, as he grows more skilful; in all sixty-four tablets may be employed. Forms of beauty of infinite variety are now possible, for the triangle, square, rhombus, hexagon, and octagon can all be employed. Several children may combine their tablets in the construction of a figure which is the joint production of their efforts. The lesson thus taught, of the value of co-operation, is not without its use. Forms of knowledge are practically taught in connection with the preceding, for they involve an acquaintance with the square and its properties; similarly the triangle, rhomboid, and trapezium. Skilful teaching of these forms must leave impressions, when in future years the child is introduced to plane geometry.

A further development of this gift is possible by the use of tablets in the form of equilateral, obtuse-angled, and scalene right-angled triangles, and the construction of the forms is facilitated by having the tablets coloured in different shades. Parquetry is a still more modern development. Small bodies of all shapes, circular, as well as right-lined, and of varied colours, are provided, and laid by the children in patterns on their ruled desks. Considerable scope may be given for originality of design, more especially as this is an occupation suitable for advanced children.

8. The **Eighth Gift** is a still further departure from the solid cube. As the plane tablets represented the sides or surfaces, so the staves presented in this "play" are the edges of such sides. A further step is made towards the realm of abstraction. The child is allowed one such staff at first, and holds it in various positions, naming them as he proceeds. A second staff is next used in combination, and crosses and angles laid and discussed; gradually the number of staves is increased until the child manipulates twelve. Forms of life of increased complexity are constructed as more and more objects are used, and a further diversity is introduced by providing staves of varying lengths. The combined work of several children may be allowed to construct "staff-pictures" of considerable complexity. The forms can be rendered permanent by fastening the staves together with threads or gum; or, better still, they may be laid upon a ruled slate and pencil lines drawn in corresponding directions, and the form thus reduced to a pencil representation. The right-lined letters, as A, E, F, &c., may be taught by the same process. Forms of knowledge may now, by the employment of bundles of staves, take the shape of considerable teaching in the elements of number. Exercises in the four primary rules are given, proceeding by very simple stages, and a good teacher will also show the connection between addition and multiplication, as also subtraction and division. Packages of ten staves are used to the number of one hundred pieces in all. Furthermore, as in the construction of forms of life and beauty, the staves are frequently broken at marked points, and are thus available for the practical teaching of fractions. By observation the child grasps the relations between such quantities as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{8}$, &c. When talking of a number of staves the relative numeral should be written on the black-board in connection with lines representing the staffs themselves, and a clear idea given of the concrete number represented by each figure. As the staves are used in making forms to represent the straight-lined and the curved letters, valuable exercises in the building up of words are possible. Simple words obtained by conversation with the children should be used, and those having the same initial letter grouped, until such letter is well known.

9. The **Ninth Gift** consists of whole or half rings for laying figures.

Twenty-four of the former and forty-eight of the latter are finally used, but a commencement is made with one of each. Some rough attempt has already been made to represent curved lines by bending the staves in the eighth gift; curves are now presented in their full beauty. The possibility of combining two half rings to enclose a space, an act impossible with two right lines or planes, enables the child thoroughly to understand and appreciate the force of the term "within," as "above," "below," "upon," &c., have previously been taught. All the forms constructed with this gift are forms of beauty or beautiful forms of life, and emphasis is laid by exponents of the system upon the early introduction of the beautiful in line to the budding mind. As with forms laid on slates with staves, those represented by rings and half rings are also imitated by the children tracing them on slates or paper.

10. The **Tenth Gift** consists of materials for drawing; the slate and slate pencil, like materials where light lines are produced on a dark background, and finally paper and pencil, different substances producing dark lines upon a light background. Froebel's system leads up to this drawing of line with pencil, and the child is trained to it as the outcome of the correct placing of cubes, oblongs, planes, staves, and rings in the earlier gifts. A slate is used, one side of which is covered with a network of lines $\frac{1}{4}''$ apart. These lines give important and necessary assistance. The slate is used in the earlier stages, as corrections are thereby made easy; but when accuracy may reasonably be expected the pencil and paper prevent carelessness, since alterations are not so easily made. Advanced pupils may use coloured pencils, and are thereby enabled to combine their tints tastefully. Perpendicular lines and figures formed from them are dealt with in the earlier lessons. The lines are gradually increased in length from a single space, $\frac{1}{4}''$, to lines covering four spaces. These varied lines are combined in different patterns. Each figure is complete in itself, and may subsequently be used in the production of more elaborate formations. Symmetry and balance of parts are carefully considered, and the patterns are taught in a carefully-arranged sequence which enables the child to proceed almost intuitively from one to the other. Horizontal lines are similarly treated, and then combined with perpendicular ones to form right angles; and these, drawn in various positions, give most interesting and pleasing combinations. Lines of unequal length are used as a further development, and also right angles to form closed figures, squares, and oblongs. Drawings of actual right-lined objects are now possible, and may be constructed in the centre of the slate or paper, and embellished with borders consisting of one length combinations drawn in the outer square. Oblique lines are then treated; these are produced by joining opposite corners of the ruled squares, and may be of varied lengths as

previously indicated. More difficult objects may now be drawn and, if the child has learned to manage oblique lines skilfully, the task of the kindergarten has been completed, so far as this gift is concerned. As a finality, curved lines may, however, be taught to the more advanced children; the points of intersection of the engraved squares furnish the required guides. The full circle should be introduced as the base of all curves.

Whenever the pencil is handled in this drawing, care should be taken that proper habits are inculcated as to the method of holding and using it. *Wherever possible lines should be drawn from left to right; good drawing in the reverse direction is a physical impossibility when lines of some length are required, and attempts to do so are intolerable in the freehand of the standards.* Unfortunately they are often met with, and may be traced to careless teaching in the kindergarten.

Following the order and continuity of the mental process involved, the eleventh and twelfth gifts descend to the extreme limit of mathematical divisibility and deal with points.

11. The **Eleventh Gift** involves the use of a ruled "net" paper placed on several layers of blotting paper, and a pricking or perforating tool consisting of a rather strong sewing-needle fastened in a holder, from which it projects for about one quarter of an inch. The result of this work is visible and permanent, and directly prepares the pupil for various kinds of manual employment. The perforating may be followed by the use of the needle and silk to embroider the figures pricked out. The general course of the instruction is on the lines of the drawing in the tenth gift. Perpendicular and horizontal lines of increasing lengths are pricked; and finally the lines are combined to produce right angles, crosses, rectangular figures, and scrolls of varied patterns. Complicated patterns are best drawn on the paper first, and further variations may be produced by pricking through two folds of the paper at once, one fold lying beneath the other to admit of this. No hesitation need be felt at placing in the hands of the pupils simple drawings of animals and plants (flowers) ready for pricking out. The exercise of slowly and carefully perforating the outlines impresses them upon the mind and memory far more forcibly than if they were only described and looked at. "Embossing" enables the shaded parts of such drawings, which represent raised or depressed surfaces, to be shewn by concentrating slight pricks on such surfaces, such impressions being made from the reverse side of the paper. This advanced work is, of course, only suitable for the more forward pupils.

12. Embroidery is introduced after some skill in perforating has been

acquired, and it consists in joining the holes made by threads of coloured silk or worsted. The stitches should be one square at least in length, to lessen the difficulty of using the needle. Stiffer paper, or cardboard, may be used for special work. Stars, rosettes, and right-lined figures in general are suitable for this kind of work; the rounded forms possible in perforating cannot well be followed in embroidering. If care be taken in the choice of colours considerable progress can be made in the development of an appreciation of artistic combinations. In connection with these gifts the outlines furnished for perforation may be coloured with crayons or paints; if the more advanced pupils are provided with a box of colours —the three primary ones only—they may proceed to the use of the brush. The secondary colours are also available by the mixing of these primary ones.

13. The **Thirteenth Gift** consists of material for cutting paper, and mounting pieces to produce figures and forms. Some considerable objections have been raised to the placing of scissors in the hands of young children; but the great source of danger is removed by using special instruments having blunt, rounded points; and the facility acquired in the handling of them is valuable, since such dangerous articles as ordinary scissors and knives must occasionally fall within the child's reach at home. Furthermore, due instruction, to the end of producing interesting forms by the use of the scissors, will certainly prevent wilful damage arising from the natural desire of the untrained child to destroy rather than create. As material for cutting a square piece of paper is used. Two fundamental forms are produced by folding this sheet:—

(i.) Consisting of eight triangles resting one upon another, as the result of folding the squared sheet diagonally, repeating the process to produce four triangles, turning the triangular form so that the open side is to the left, and folding the left corners over the right in reverse ways, one upwards and the other downwards. This fundamental form is held so that the open edges are to the left in all subsequent processes.

(ii.) The second form produces a six-fold equilateral triangle by folding the square sheet diagonally, finding the middle point of this diagonal, and dividing into three equal parts the whole angle situated on this centre, thus producing angles of 60°. The paper is then folded in the legs of these angles by bending the one acute angle of the original triangle upwards, and the other downwards. The protruding corners are then cut off, and the desired six-fold equilateral triangle results where the entire open side is the base of the triangle. The form is difficult to produce, and if used is best prepared, in part at least, by the teacher.

Cuts are made in these fundamental forms—perpendicular, horizontal, oblique, and combinations of any two. The oblique cuts are more especially suited to the second form. Finally, circular cuts may be made in either form. The patterns produced on opening the paper after cutting, as also the pieces cut off or out, are interesting and instructive, as yielding pleasing outlines of regular form. Altogether some two hundred exercises are provided by Froebel, and it is advisable that the majority of these should be worked through before the child is permitted to invent and cut out original forms. The objection to the "play" is that it is not intellectual; the child makes certain cuts as directed, opens out the sheet, and finds a certain result. No thought has been necessary to produce the result, and no reason can be given why it is produced. For this reason many teachers prefer to develop the second stage of the employment, where the clippings are mounted to produce various patterns. To this end paper already gummed on one side is necessary, and of necessity a sheet of white or coloured paper as a base. Coloured paper should certainly be employed for the patterns, and the pupils may interchange their products so as to admit of greater variety.

14. The **Fourteenth Gift** presents materials for braiding or weaving. These are prepared sheets of coloured and glazed paper about 7″ by 6″, cut, save for an all-round margin 1″ wide, into strips from $\frac{3}{16}''$ to $\frac{1}{4}''$ wide; other sheets from which loose strips may be torn as required, and a special needle formed of a flexible strip of steel some 7″ long, provided with a clip at one end to hold the strip under manipulation. By the aid of this instrument the loose strips are interwoven in the prepared sheets to produce varied patterns showing different combinations of colour and form. The course of the needle, with its affixed strip, may be expressed by a formula where a figure stands for the number of strips in the main sheet, and the letter U (up), or D (down), for the movement to which it is subjected. Thus the simple passing of the needle and strip across the sheet, alternately under and over, would be expressed by 1 U, 1 D. This is a simple formula. It is obvious that some change must be made when the next loose strip is braided, otherwise the pattern would be meaningless, and the slips would slide one over the other at the slightest disturbance. The simplest variety would be produced by reversing the formula so that it becomes 1 D, 1 U. Such a combination of formulas is invariably necessary to the fixity of the work; but the number of strips in the braided sheet, elevated or depressed, may increase from 1 to 5. The invention of these formulas is a simple mathematical operation, but a scheme which shall be graduated to the growing powers of the child, and, at the same time, omit no useful pattern involves much thought. Further variety may be given by using strips of different widths, and these are particularly recommended to relieve the work when

slow children are kept for some time at the pattern 1 U, 1 D—1 D, 1 U. In many patterns it is well to insert the middle strip first, then the one above and below, and so proceed until the sheet is filled. A further modification may be given by working the braiding so as to produce a form, as a cross or a window, in the middle of the sheet. Oblique braiding may also be used, and free braiding where strips are intertwined without the use of the braiding sheet. This latter is possible by using long strips folded in halves as the foundation, and passing shorter ones over and through the folded ones, which are laid side by side with their loose ends alternated. No great width of pattern is possible in this case. The final result may be rendered permanent by the use of gum on the under side of the finished "mat." Lastly, the most advanced pupils may use glazed muslin, leather, ribbons, straw, and the like, as materials. Care should be taken that there is no incongruity in the colour combinations of strip and braiding sheet, and the children must work their exercises in a good light. This special occupation is usually a favourite one; both hands are employed, and the brain is also busy; mistakes are at once seen and readily corrected. The taste for colour is satisfied, love of the beautiful is fostered by the symmetry of the patterns, and ideas of number are brought home individually in the careful calculations entailed by the working of the formulas. The simplest forms of the occupation are capable of execution by a child of three; the most complicated would afford exercise for the ingenuity of one of twelve or fourteen.

15. The **Fifteenth Gift** presents slats of birch, or any similar tough wood, ten inches long, $\frac{3}{8}''$ broad, and $\frac{1}{16}''$ thick, and these are to be interlaced to produce various figures. One slat is used at first, and the child is questioned as to its relative sizes and its more evident properties. Further conversation leads to the naming of objects similar in general form—the rafters of a house, certain kinds of gates, the rails of a fence, &c. A second slat is then given, and the child finds the two perfectly alike, and proceeds to lay them in various positions; continuing the exercises, it becomes possible when four slats are used, so that each one is in contact with three others to make forms which may be lifted as a whole. Angles of all kinds may be constructed, and from one form another may be developed, by closing or opening the slats of which it is composed. The exercises must be taken slowly and carefully, and each form made the subject of conversation as to its special outline and properties. A fifth and a sixth slat are used, and further forms constructed. As many as ten may finally be employed in the construction of mathematical figures and somewhat intricate lattice work. Forms of knowledge are impressed, as the figures are divided by diagonals; forms of beauty are constructed in many of the combinations, and forms of life in models of lattices, fences,

fans, gates, &c. Each form should be carefully investigated as to its angles, constituent parts, and the office performed by each individual slat. The occupation sorely tries the patience of a hasty worker, for the wrong placing of *one* slat often causes the whole form to fall to pieces when moved.

16. The **Sixteenth Gift** involves the use of slats having many links. Some beautiful combinations are possible, but as the gift is not often brought into use, a passing reference only need be made to it.

17. The **Seventeenth Gift** yields materials for intertwining, and is somewhat related to the fifteenth, save that a more flexible material is used, and the forms produced from one length of material. The final closing of the form may be made by gumming the finished ends together, and strips may be lengthened in the same way as required, but cleanliness must be insisted upon. The paper employed *may be* the slips cut from the sheets used in preparing the eighteenth gift, or may be specially provided. To secure regularity of form, the tablets of the seventh gift should be used as a guide; triangular forms are first constructed, care being taken that the paper strips are accurately folded at the corners. As the figures advance in complexity, and even to give variety to the elementary forms, a corner of rosette shape may be used. Combinations of squares and oblongs intertwined in the process of construction, and giving, by their combinations, hexagonal and other polygonal figures, form the final exercises. The beauty of the figure should always form a more important feature than its mathematical properties, though the latter need by no means be neglected. Any work produced by the children may, if of special merit, be mounted on cardboard and preserved. This gift requiring, as it does, considerable manual skill, should be introduced into the upper section of the Kindergarten only.

18. The **Eighteenth Gift** employs paper as a material for folding into an almost infinite variety of forms. It is one of the most important of the employments; and from its interesting nature, and also as it furnishes forms which are of some permanency, it is usually a favourite with children. They may prepare their own sheets, by folding a half-sheet of letter-paper placed on the desk in such a manner that its longest dimension is from left to right. The corners are then folded downwards, in succession, at right-angles to the base-line. Unfolding the sheet at its base-line, it is seen to form a hexagon, having four superimposed triangles. These are folded down at their bases and carefully cut off. The oblong central piece may be used as material for the seventeenth gift, and the four double triangles, opened into squares, are ready for use as the eighteenth gift. Special paper, prepared in squares, and of various colours may, however, be purchased, and when possible should be so procured. The

greatest care and cleanliness must be insisted upon in all the folding, creases should be carefully flattened with the thumb-nail, and a sharpened slate pencil will be found useful for opening some of the smaller folds prior to further manipulation. The paper is folded diagonally into two isosceles triangles. Folding again on the other diagonal, and also into oblongs from both sides; placing the sheet so that the diagonals are respectively horizontal and perpendicular to the edges of the desk; folding the corners in to the centre; turning the sheet so that the new form occupies the same position; and folding the corners to the centre; give a fundamental form from which many of the completed figures are obtained. This indicates the general plan pursued, but practical work is necessary, and *a manual containing diagrams should be consulted.* Froebel mentions many forms of life as possible, some involving larger sheets of paper. Forms of beauty are constructed from a slightly different fundamental. Cutting out and colouring may give variety to the occupation, but in no case should finish, accuracy, and cleanliness be sacrificed to complication; better a simple pattern, correct and clean, than an elaborate one, slovenly and soiled. Much mathematical instruction is possible as the work progresses, but it must be carefully adapted to the abilities of the child, and on no account made the chief feature.

19. The **Nineteenth Gift.** The figures produced by the laying of staves in the ninth gift are sometimes rendered more or less permanent by sticking or pasting them on to stiff paper. The nineteenth gift, however, yields a means of gratifying the child's desire to produce lasting results by furnishing a means whereby his productions may be preserved in their final and finished form. Peas are soaked for about twelve hours in water, and dried until they are just soft enough to retain the points of prepared wires pressed into them. Two wires are united by one pea into a straight line, and each of the three angles in turn. Three wires and two peas give a longer line, angles with one short and one long side; three wires are introduced into one pea, two parallel wires are continued by a third, and finally an equilateral triangle is produced. These exercises proceed with a sufficient supply of wires and peas to the formation of the square, parallelogram, rhomboid, and rhombus; diagonals are introduced, and more and more elaborate combinations of triangles and polygons in the one plane. The forms laid with the tablets may be constructed, and with wires of varying lengths all the letters of the alphabet. The difficulty of curves in such letters as B and O being overcome by increasing the number, and shortening the length of the wires. Further progress is then possible to solid forms, which may be built up so that the wires represent the edges and the peas the corners; thus, two equilateral triangles, united by three equally long wires in a vertical position, form a prism; and so with squares.

Simple objects are built by the same methods as benches, chairs, tables, baskets; and advanced pupils may proceed to the construction of very elaborate forms. This work lays a basis for the thorough comprehension of the relationship existing between the ordinary geometrical "models," and trains the child not only to observe the external forms, but also the internal possibilities of objects presented to it. Furthermore, from the nicety of handling involved by the use of such fragile objects as soaked peas, considerable dexterity of touch is developed, and a lightness of hand which should be valuable in writing and drawing exercises.

20. The **Twentieth Gift** is prepared clay for modelling. Froebel held this in high estimation, and rightly so, for it is an occupation natural to the child; and, from the plasticity of the material, delightful in itself, there is something satisfying in the absolute mastery of the hand over the soft mass presented for manipulation. Many teachers object to it because of the necessary soiling of the hands, but the special clay now used is readily removed, and hands dirtied by work are not a disgrace. Others urge that it leads to no definite end. To this it may be answered that it is manual work of the best kind, because the result is concrete and visible in all its dimensions, representing, as it does, the actual body. Moreover, it prepares for the more or less abstract forms presented by drawing. Froebel proceeds from the modelling of the geometrical forms of crystallisation—cube to cylinder—sphere—pyramids, with varying number of sides, and prisms, to the most complicated figures of bodies, with twelve and twenty equal faces. It is preferable to form first a sphere and then model common objects from it, as an apple, pear, or potato; second, a cylinder, from which a bottle, a bag of flour, &c., may be developed. Proceeding on these lines, models of many objects of surprising difficulty are formed; a teapot with handle and spout complete, a bird's nest with eggs, a swan, and similar forms are often successfully attempted. Clay is usually bought in the form of a dry whitish-grey powder, which should be judiciously moistened with water, until the right degree of plasticity is obtained, and its consistency maintained by the careful exclusion of outside air from the mass until needed for use. This is best done by placing it in an earthenware vessel, keeping it covered with wet rags, and in a cool place. The child should be provided with a small board, about the size of an ordinary exercise sheet, on which to model; oiled paper may also be furnished as a further aid to cleanliness, as well as small wooden modelling tools to aid in the formation of the more difficult geometrical forms.

This concludes the "gifts" of Froebel. Further occupations on the same lines are provided for the Standard children as indicated in the following chapter. It is, perhaps, needless to add that in the actual "Kindergarten," action songs and other movements to music, enliven and

diversify the school hours. These are introduced into all good infants' schools, and in common with the occupations themselves, are improving in character and usefulness year by year; a necessary result of the amount of thought given to their work by the many highly-qualified teachers engaged in the important work of infant teaching.

VARIED OCCUPATIONS.

Introduction of Varied Occupations. For many years a gradually growing conviction has impressed itself upon the minds of our leading educationalists of the necessity of introducing some form of hand-work, other than the handling of the pen and pencil, into the school life of children in the ordinary government standards. The transition from the varied "plays" of the infant school, where kindergarten employments yield occupation for fingers and brain alike to the hitherto, almost entirely mental work of the standards, was felt to be a retrograde step; and the want of some form of training which should practically be a development of the manual work of the infant school has become universally acknowledged.

Their Value. For educational reasons manual training is of great value; the arguments used in favour of Froebel's system are many of them of great force when older children are dealt with. As a disciplinary agent to inculcate habits of neatness and accuracy, as well as to develop manual skill and a love of work as work, as well as a means of producing actual things to be seen, handled, and used, hand-work stands unrivalled. The pupil may be inattentive in an oral lesson, may fail to grasp the points involved, or may be unable to adapt the knowledge gained without being detected by his teacher. Not so in these employments; each child is thrown upon his own base, so to speak; he must produce his model, must make it with his own hands, think about it, attend to it, and carry out the instructions given to him. Apart from these purely educational arguments.

stern necessity compels us to seek every possible means to train our children. England is the workshop of the world, but she has many and formidable competitors. No measures ought to be left untried to keep her place, and all thoughtful educators acknowledge that this continuous manual training of children from an early age throughout their school career is one of the essential factors in our nation's prosperity.

Official Circular on the Subject. The English Education Department recently issued a Circular (No. 322) dealing in an admirable manner with the Varied Occupations which should find a place in the curriculum of a good infant school. Many of these are practically the Kindergarten employments, and the others carry their own explanations. A further Circular (No. 332) refers to the discontinuance of the infant school training in "deftness of hand," and "correctness of eye" in the standards, and suggests certain occupations as desirable in the time table of junior and senior schools. These occupations will probably fall to children of ages from seven to eleven, but may be developed to occupy them through the remaining years of their school career, though in the most advanced schools, especially in large towns, children from eleven to fourteen usually receive lessons—if boys, in wood and metal working: if girls, in laundry work, practical cookery, &c.—at special "centres."

Scheme of Instruction. It is proposed to give an outline in the following paragraphs of the schemes of training possible within the walls and with the desks of an ordinary schoolroom.

The more technical forms of instruction are usually undertaken by specialists, and need an infinitely more detailed treatment than space permits in this manual.

It may here be incidentally remarked that the introduction of these subjects into the school-life of the ordinary child does not pre-suppose any definite training toward any particular trade; the sole aim is to develop the hand, the eye, and the brain, and to give such an intelligent dexterity that, in after years, a handicraft may be taken up with avidity and ease.

The materials chosen are determined solely by considerations of facility of working, suitability to the place and worker, and last, but not least, of economy. It must further be emphasised that the "occupations" do

stand alone as things separate from the ordinary subjects of school instruction; they are important aids. The child who draws accurately, cuts out carefully, and completes a paper model in a satisfactory manner, is receiving a training in the necessity for continuous attention to a piece of work, calculated to show itself in many of his ordinary school lessons. Furthermore, the change of work is excellent in itself, and can be productive of nothing but good; for the minds of children need and must have variety; they cannot, and do not, attend to lengthy and unvaried lessons; whereas, from oral to hand-work, such a pleasant transition is possible that no mental strain is felt. Over pressure is not produced, but rather obviated, paradoxical as the statement may seem, by the introduction of these additional elements into the daily routine of school life. Nor must the fact be lost sight of that many scholars, dull and stupid in purely mental work, often produce the best specimens of finished models in these occupations. The moral effect upon their dispositions is obvious —a new phase of life has been opened to them.

Of the six occupations dealt with in the following notes all need not be taken; the teacher may choose between doing a little of each, or developing any two or three of them so as to provide full employment during the whole of the school course. An alternative plan would be to adopt some of the schemes in the lower standards, and others in the upper; with some of the occupations this is obviously necessary.

In all cases the personal tastes of the teacher are powerful agents in determining the course chosen; but it is not fair to the children to exclude a desirable occupation simply because the teacher dislikes it. Clay-modelling, usually a favourite with the scholars, is often excluded for this reason. It is, however, to be hoped that all teachers who claim to truly educate their charges will endeavour to conquer their antipathy to any special exercises, by seeking to ascertain their educational value, and once convinced of this, will unhesitatingly adopt them. The actual skill required by the instructor of Standards I.—IV. may readily be acquired by anyone with ordinary powers of eye and hand. The exercises should receive much private practice, and all lessons call for careful preparation.

I. Clay-modelling. This occupation is unequalled as a means of training the powers of observation. It is usually commenced in the infant school, but in its higher stages may profitably employ children of the higher standards.

The material used may be procured in the form of a whitish-grey powder, which, when judiciously mixed with water, works into a substance of extreme plasticity. Once mixed, the requisite degree of moisture may be sustained by keeping the clay, when not in use, in an earthenware or metal receptacle provided with a closely-fitting lid to exclude the external air. As a further precaution, a damp cloth should form the immediate covering of the mass. The children are provided with small pieces of planed board, about 11″ by 7″, on which the clay is moulded; and, in the higher exercises, with wooden modelling tools of simple form. The teacher must carefully estimate the size of the piece of clay to be used by each child, and so the quantity required by the class. A piece of stout wire, having a small cross handle of wood at each end, will be found very useful for cutting the separate pieces; and it is often advantageous to supply each child with a damp sponge to slightly damp the fingers if the clay shows a tendency to become too dry to manipulate. The exercises are simple, and in the hands of a skilful teacher will be carefully graduated and developed, until some considerable degree of skill is acquired. The sphere is moulded first, then cut into pieces, and smaller spheres formed. Subsequent lessons may involve modelling simple fruit-forms, the actual objects being presented to, and examined by the class; the orange, lemon, apple, pear, are examples. The cylinder may then be considered, and developed into a model of a candle, pencil-box, cigar, bottle, &c. The cube follows as an introduction to exact working; a certain size of edge should be insisted upon, and the wooden modelling knife brought into use to make the outline clear. Models formed from this figure and its developments are slabs of varying dimensions—square boxes, pyramids, obelisks, crosses, and the like. Finally, the children should be encouraged to make objects of different sizes, and allowed to give play to their fancy in the modelling of original designs. All boards and tools should be carefully cleansed after use, and on no account replaced in the store cupboard in a dirty state. In the highest standards modelling may be taken from plaster casts, and the model afterwards cast in plaster; but this is work which needs so many special appliances that it cannot, except under very exceptional circumstances, be adopted in the ordinary schoolroom.

II. Drawing and Cutting Out. The drawing of various geometrical forms on plain paper, and the consequent training in the use of the set-square and ruler, followed by the cutting out of such forms with blunt-pointed scissors, and, if they allow of it, folding them to form a model of regular outline, is a useful occupation, which is at once simple to teach and interesting to the

The materials required for this exercise are the scissors with rounded points already referred to in connection with the infant school work; the usual wooden rulers and small set-squares having angles of 90°, 60°, and 30°, together with 6″ squares of plain white paper. A simple square is ruled first, careful instruction being given in the manipulation of set-square and ruler; from this various patterns are developed and cut out, and finally, by dividing the sheet into nine equal squares, and partially separating the four outer ones, a model cube may be constructed; triangles are then dealt with, and from an equilateral one, divided into four similar figures by lines parallel to the sides from their central points, a model of a triangular pyramid may be obtained. The exercises may be continued until models of somewhat complex outline are constructed; but it must be borne in mind that a simple object accurately made is always preferable to a complex one finished in a slovenly style. In all cases the drawings should be constructed to given dimensions, and the children then exercised in making them larger or smaller.

III. **Drawing and Colouring.** An exercise in the matching of colours forms a useful introduction to the colouring of drawings made by the aid of the same instruments as in the preceding exercise.

For this the children are provided with small parcels of differently-coloured wool, in short lengths; the teacher has a box of larger and thicker pieces, similar however in colour. Like colours are selected to those displayed, and training is given in the grading of shades of the same colour, as also in the formation of colour combinations pleasing to the eye. Drawings made, either on plain paper as in Occupation II., or if somewhat elaborate patterns, on squared paper, are coloured either with crayons of soft French chalk laid on with a paper stump, or with water colours. The crayons are supplied in boxes and used in holders, and the colouring may be produced either by rubbing down with the stump light parallel lines drawn on the paper with the crayon into an even tint, or producing the same effect by first reducing the crayon to powder, and applying this with the stump. In all cases the colour must be so laid on as to produce an even tint; accuracy of work and good finish must be insisted upon. Ragged edges and coloured surfaces, showing marks of the crayon, or uneven in tint, must not be allowed, and no class ought to attempt difficult patterns until the simpler ones can be well coloured; a sufficient variety of these can be given to prevent the work becoming monotonous.

Water colours are hardly suitable except in small classes, as very close supervision is necessary; but if they can be adopted the results well repay

the extra trouble. In any case some considerable preliminary practice must be undertaken by the teacher himself, unless he is already familiar with the art of water-colour sketching.

The exercises consist in colouring, in different shades, variously prepared patterns, simple at first, as, for example, a square coloured in bands, or in four triangular sections, triangular and hexagonal forms similarly treated. Then curves may be arranged so as to form simple figures enclosed in a regular geometrical outline, and, finally, scrolls and mosaic patterns of considerable complexity. Considerable practice in the freehand drawing of curves is possible during this work; in all cases construction lines must be removed before colouring is commenced, and care must be taken that the surface of the paper is not destroyed by the excessive use of the rubber. Colouring is a valuable means of training the eye in the appreciation of form and mass, as it serves to throw into strong relief the various parts which are differently tinted. One of the great difficulties of freehand drawing—the balancing of mass against mass—is thus dealt with.

IV. **Mounting and Designing in Coloured Paper.** The folding and cutting of paper squares, as described in the chapter on Kindergarten, may be developed into an occupation suitable for children in Standards I. and II. by the addition of coloured and gummed sheets, which may be mounted on plain or squared paper, in pieces forming patterns varying in form and colour.

The fundamental forms previously described are used, and the square and triangular clippings obtained are laid in various patterns on the foundation sheet. These patterns should be indicated at first, but soon the children may be allowed to design their own. Once a pattern is approved, the gummed sides should be moistened with a sponge provided for the purpose, and the component pieces mounted on the white sheet, which may have its diagonals faintly ruled to serve as guides, or squared paper may be used.

V. **Wire-bending.** This provides an interesting occupation for children in Standards III. and IV.

Pieces of iron wire of one foot in length, and of such gauge and quality as to admit of readily bending to any angle, and small pliers of a size suited to the hands of the children, together with the usual drawing materials and paper, are needed for this exercise. The wire when under treatment is held in the left hand, and bent sharply to the required shape, being grasped with the pliers held firmly in the right hand at the point of distortion. The bending should be the work of the thumb and forefinger,

of the left hand more than that of the pliers. The wire may be straightened if necessary, and may be broken when needed by repeated movements backwards and forwards at the same point. In all cases a firm grasp is the secret of correct bending. The exercises consist in bending the wire which may vary in length as required, to a shape ruled on paper, plain or squared, to given dimensions. Angles—acute, obtuse, right—are first made; then square and oblong forms, various diamond patterns, and outlines of regular polygons. Accuracy as to length of side and size of angle should be insisted upon, and "finish," in the form of sharp angles and the perfect flatness of the completed figure. Careless scholars will be found to produce rounded angles, and the various sides of their model will perhaps lie in different planes. During the progress of construction the wire should be frequently applied to the drawing to ensure this desirable flatness. Elaborate patterns of Grecian-scroll borders, mazes, Maltese crosses, are possible in the advanced work; and a further variation is found by requiring the construction of the figure *without* the application of the wire to the drawing until the model is finished.

VI. **Cardboard Cutting and Modelling.** This may be looked upon as the final occupation possible in the desks of the ordinary schoolroom.

The tool used is a special knife, having a small fixed blade some two inches long, with an angular point. The handle is about four inches long, and of such a thickness as to be readily grasped by the child. It must be held at a high angle, and close to the ruler used as a guide. The forefinger must be kept on the back of the blade to retain control over its movement. Though some loss of power results from this, it is preferable to endangering the fingers of the left hand by using the knife with all the fingers of the right closed around the handle. A wooden ruler is obviously inadmissible, as it would soon be destroyed by the working of the knife blade on and over its edge; so flat steel rules, conveniently of six inches long, are used. The board used in clay-modelling comes into play to preserve the desks, and is used as a cutting board. Ordinary lead pencils and set-squares are needed, and a supply of *grey* cardboard (white soils readily). The cardboard should be of such a thickness as to need two or three cuts on the one line to sever it, so that after one cut it may be bent as required in some of the modelling exercises. It ought to be procured in sheets of sizes proportionate to the exercises worked. Strips of bookbinders' cloth, bought ready gummed, are used to bind the edges of the models. These strips are cut to the length of the edge to be bound, folded lengthwise down the middle, and then fitted symmetrically in position.

Varied effects may be produced by using strips of different colours. The exercises consist in drawing and cutting out geometrical figures of graduated difficulty, constructed with ruler and set-square. The patterns modelled in wire-bending may be reproduced, and in Standard IV. many of the simpler outlines made use of in the scale-drawing exercises; plain block-print letters also furnish useful patterns. When the pupils can cut out forms accurately, and in a finished style, *i.e.*, with clear edges and sharp angles, they may proceed to draw forms which when cut out will admit of being folded into various models, as cubes, prisms, boxes, trays, &c., and the paper models referred to in the Second Occupation should be constructed in this more durable material. The teacher may plan out his own working drawings, or, preferably, consult one of the many illustrated manuals where such drawings are figured. Some of the lines drawn are not cut completely through; these should be indicated by being dotted. The binding of the model when folded into shape calls for much patience, neatness must be insisted upon; in fact, much of the disciplinary value of the exercises is lost if perfect finish is not secured.

The foregoing is a brief sketch of the most usual occupations; doubtless, as time progresses, and more teachers become engaged in this fascinating branch of education, new ideas will arise, but the principles must always remain the same, and of these the leading one is, that nothing should be accepted from a child which falls short of his best effort; at the same time the work must not be rendered distasteful by a want of sympathy or a lack of patience on the part of the teacher. The preparation of the materials and the tools required in these occupations involves some considerable time, as also does their collection and storage, and to render these matters as little irksome as possible, the lessons should be so placed on the time-table that they commence after an interval of recreation, or after the mid-day recess. The apparatus, &c., may then be distributed in readiness for the arrival of the class.

PHYSICAL EXERCISES.

I. **Introduction.** Physical training as a branch of elementary education is growing rapidly in importance, and is receiving attention and recognition from the Education Department. The Code lays down the provision for physical exercises on some approved system as one of the requirements for the highest grants, and insists upon time being allotted to them in the school time-table. Some exceptions are made in the case of half-tim and delicate children. The need for such exercises is clear apparent. It has been remarked that one of the elements of success in life is that the candidate be, in the first place, "a good animal," by which is implied the possession of a sound constitution and a well-developed frame. The sedentary nature of most of the school occupations of the child militates seriously against due and proper growth of the body, especially of the chest, arms, and respiratory organs; fortunately the innate activity of childhood, and the predisposition to spend most of the hours of leisure in games more or less vigorous, tends in some measure to counteract the evil. Still, these games, from their irregularity, do not develop the frame scientifically or systematically; and often, especially in town schools, the very children who ought to indulge in them, *i.e.*, those of hereditary or contracted studious habits, refrain from doing so unless obliged. Even in country schools, physical exercises are of great value as aids to a free carriage and graceful walk, features anything but common among our peasantry. Further arguments for the introduction of this subject into the time-table may be found in the relief obtained

from the strain of mental work. It affords an outlet for that superfluous bodily energy possessed by every properly-constituted child, and which every good teacher seeks to find a use for rather than to repress. After a short period spent in drill, the children return to their ordinary school lessons refreshed and invigorated, and with a capability of sitting still, and of giving close attention to the lesson, not easily obtainable otherwise.

The most important factor, however, in the introduction of these exercises, is the teacher's appreciation of their value, and his ability to teach them. To this end it is absolutely essential that teachers should themselves go through a course of physical training; having done so, and having felt the benefits, mental and physical, which follow, the instructor is able to approach the class with confidence, and ought to have a zealous desire to improve the physique and bearing of the children. Furthermore, a qualified teacher avoids the errors into which many novices fall, whereby unfit exercises are given, or suitable ones are practised in a manner injurious to the growing frame.

An additional word may be permitted as to the personal bearing of this portion of school work. To few individuals is sound health more essential than to a teacher; patience and good temper ought to be the key-stones of his character, and these valuable qualities are largely the adjuncts of a healthy body. The practice, each school meeting, of a selection of the exercises hereinafter numerated, by the teacher as leader of the class, is attended with surprising physical results; but the practices must be brief, regular, and frequent. The writer assures his fellow-workers that if they neglect to learn the exercises themselves, and to practice them during the tuition of their pupils, they neglect one of the simplest and best means of obtaining that essential to happiness—good health; for so great and constantly increasing are the calls upon a teacher's time out of school hours, that regularity in exercise is most difficult to obtain, particularly when it is most needed, *i.e.*, in the winter months:

II. Points to be observed. Physical exercises should be

made use of during every school meeting. Short spells of five or ten minutes' duration are infinitely preferable to longer and less frequent practices, from every point of view—relief is given from mental strain, and physical development proceeds upon better lines. More lengthy lessons, interspersed with judicious rests, may be needed at first, while the exercises are being taught; but once learned, the actual time of exercising need, at any one practice, be no longer than indicated. Simple exercises are better than complicated ones, for the important reason that they tend sooner to become automatic. It is a well-known fact that motions of this class benefit, without tiring, the body. At the close of a long walk, when every step is accompanied by a corresponding mental effort, fatigue rapidly increases; so in these drills the exercise thoroughly known is performed with ease while the brain rests. This is the finality to which the training should work.

Circumstances must to a great extent determine the place of this subject in the time-table, but it may well be introduced immediately before or after "recess." Advantage can then be taken of the presence of the children in the play-ground, if open-air drill is to be proceeded with, or they can, without undue loss of time, be massed or otherwise arranged in the schoolrooms.

Suitable music should invariably accompany all exercises. Bright and familiar tunes are advisable, and in some exercises the pupils may be permitted to sing to the accompaniment.

Words of command must be given smartly, and in a brisk, cheerful tone, and, as a rule, in couples, the first word being cautionary, followed, after a pause of longer or shorter duration, by the final word, *e.g.*, "Quick"—"March;" "Right side"—"Charge."

Exercises must on no account be performed in an abrupt fashion; all must be rhythmical, flowing, and graceful. No violent or sudden stoppages of the arms should ever be permitted, they are decidedly injurious. Ignorant teachers frequently urge their scholars to strike out vigorously in such exercises as the thrusting of the hands (with or without dumb-bells) from the shoulders. No greater mistake is possible, and an otherwise beneficial exercise becomes positively injurious. On no account should practices be prolonged to the point of fatigue; in fact, it is better as previously pointed out, to make them more frequent than to lengthen any one interval.

Heavy apparatus, dumb-bells, or bar-bells, must be discarded; to say

nothing of other possible evils arising from their use, they tend to increase the muscular power and bulk of the arms at the expense of the chest, a most undesirable thing in children. The tendency of all modern physical training is in direct opposition to that of a few decades ago; the huge clubs, ponderous weights, and like monstrosities of antiquated gymnasia, are now comparatively unused, save by those fully developed athletes who find a pleasure in testing their mature muscles.

To develop the chest, to strengthen and promote the growth of the respiratory organs, deep breathing should be encouraged, but the mouth should never be used for this purpose. Steady and lengthy inspirations and corresponding expirations through the nostrils are the essentials. As a further aid, the head should be so held that the eyes view the hands whenever, in the course of any exercise, they are raised above it.

Though the arms and chest form the main portions of the body to which attention is directed, they must not be the sole parts exercised. An endeavour must be made by the introduction of various swaying and bending motions of the trunk to stimulate the great muscles of the waist and abdomen to the easy action of which an upright and graceful walk is due. One of the strongest arguments in favour of the system known as "Swedish Drill," lies in the attention it pays to the uniform development of all parts of the frame.

III. Choice of Exercises. This section falls naturally under two heads, open-air and schoolroom drill, and further under the sub-division of exercises with and exercises without apparatus. It is not proposed here to attempt more than to indicate the possible exercises and the apparatus to be used Special manuals abound, which show, by careful diagrams and photographic representations, the various movements, and these should be consulted when any particular course is decided upon. The trained teacher of physical exercises will, moreover, prefer to originate, select, and arrange his own exercises.

The open-air drill is, whenever circumstances (not the least of which is the weather) permit, much more beneficial, for obvious reasons, than that taken in the more or less impure air of the schoolroom. Possibly, in most cases, open-air exercises can be taken during the summer, and indoor ones during the winter months. The latter must be modified to suit existing conditions. Schools provided with ample floor space, or central halls, will

probably be able to use apparatus and exercises as freely indoors as out; while those wanting in this desirable accommodation must, perforce, confine themselves to simple arm and body movements in the desks. These are, however, by no means to be despised, for they provide for the development of the chest, and produce an upright carriage of the head and a backward set of the shoulders, more valuable because they are not usually encouraged by the ordinary games of children.

Marching. Whatever exercises are chosen, all drill should include considerable practice in marching. Attention should be paid to the position of the body and head; the latter must be held erect, with the eyes looking to the front, and the arms must be only slightly swung. The children will find it easier to keep step, and will present a decidedly better appearance if "sized," so that the smaller children occupy the centre of the line or column. Turning and wheeling may also be taught and, in the higher standards, the formation of "fours." Ordinary marching, two children abreast, may be varied by causing alternate files to wheel to the right and left-about; so that fours are formed, then eights, and the process reversed until the original formation is arrived at. Further exercises are obtained by causing the children to march with their arms in different positions, *e.g.*, hands on hips—hands above the head—hands clasped at the back of the head. When some proficiency in ordinary marching and wheeling has been acquired, figure-marching should be attempted—ordinary figures-of-eight—loops and spirals lead to what is commonly known as "maze" marching, an exceedingly pretty performance when well done. All the exercises performed in ordinary marching at the quickstep should be practised at a slow run, or as it is called in military parlance, "the double." Care must be taken that no weakly children are overstrained; steadiness of pace and graduation of time to the age of the children are the best preventatives. The arms should be so held that the elbows are pressed to the sides, the forearms horizontal, and the fists clenched. The head and shoulders should be kept well back, and the mouth closed,

breathing being through the nostrils only. The running must be performed on the toes; flat-footed work is neither so graceful or so useful. Speed is not to be sought for; a steady "double" pace, keeping time to an instrument if it can be brought into use, with the maintenance of a correct position of the body and a right use of the feet, are the points to be aimed at.

Free movements. At the head of free movements stands the elaborate and scientific series of exercises comprising what is known as "Swedish Drill." This drill should not be attempted by an untrained teacher. To the uninitiated, it appears monotonous, and many of the exercises seem so trivial, as to be worthless; but its exponents claim justly that it develops all the parts of the frame harmoniously; and certainly where the necessary teaching skill exists it should be taken. No apparatus is needed, and music is not essential.

Dumb-bell Drill. Similar exercises to those taught with the dumb-bells, may be taken without apparatus, the hands being closed or open, as the exercise requires. The usual motions may be grouped as follows:—

(*a*) Twisting motions of the first, or bells, with the arms in different positions, by the sides; bent at the elbows; extended sideways from the shoulders; stretched above the head; extended horizontally from the shoulders to the front.

(*b*) Flexions of the fore-arms in various directions, the upper arms being kept level with the shoulders. The hands or bells, describe semi-circular arcs.

(*c*) Horizontal thrusts, with alternate arms, then with both, one leg being advanced, the weight of the body thrown on the advanced thigh, and the feet kept at right-angles, the back foot being flat on the ground. This exercise is to be performed without any jerk or sudden stoppage, and the shoulder is to follow, the arm being extended by a twist of the trunk from the waist upwards.

(*d*) Swinging motions of the arms from side to side above the head, the body being held erect, but the trunk twisted at the waist, the eyes directed upward, the feet being apart, and the heel opposite to the arms, raised.

(*e*) Bending so as to touch the ground with the hands, or bells. the legs being kept firmly straightened, and no flexion of the knees permitted.

(*f*) Charging motions, where the legs are freely exercised as well as the

arms. In these, the feet are advanced alternately to the right, to the left, and to the front, care being taken to keep them at right angles to one another in all the positions assumed. The bells may be swung above the head alternately or simultaneously as the foot is advanced.

The ordinary position of attention should be assumed before and between the exercises. Feet at an angle of 45°, heels closed, knees well pressed back, chest expanded, chin drawn slightly to the neck, arms hanging naturally from the shoulders, thumbs to the front, shoulders squared. Most of the exercises admit of being taken with alternate arms, and then with both simultaneously. All motions are to be gentle and graceful—this caution is repeated—as experience shows its necessity. The exercises may be taught to numbers. The children, after a time, counting their own, or they may preferably be accompanied by the piano; tunes with a well-marked accent and a suitable rhythm should be sought for.

Bar-bell exercises. These admit of similar grouping.

(*a*) The passing of the bar above the head from a vertical position at the side, to a horizontal one at the back, and so to the front again.

(*b*) Movement of the bar with the hands extended along it, in a horizontal plane from the back to the front and the reverse. Upward thrust from the chin above the head, down behind the same to the shoulders, with the bar horizontal, the hands so held as to divide it into three parts.

Similar exercises to those given with dumb-bells, under heads, *c*, *d*, *e*.

Before commencing the exercise, the pupils should march on to their places, and stand sufficiently far apart to avoid any clashing of the bars. The position of attention is assumed with the bar held vertically at the right side, the bottom ball being against the outer centre of the foot, the thumb being next to the body, and the fingers spread down the staff of the bar-bell, which may easily be raised an inch or two to admit of marching. Almost all exercises necessitate the extension of the hands along the bar. The left hand is brought to the right as the latter advances the bar vertically to the front, and both hands are smartly separated by sliding them along the bar in opposite directions, the bar now taking a horizontal position. It should be so held that

the thumbs are towards the body, and with the hands at that distance apart most convenient to the child. After each separate exercise this position is resumed.

A further development with this apparatus consists in the children facing in pairs and passing the ends of the bar-bells to each other, so that they hold on end of the different bars in either hand. Various movements are possible, and give variety and interest to the drill. Children of like stature and strength should work with one another.

Scarf-drill, &c. Similar exercises to the bar-bells are often taken in infants' schools with scarves, and very pretty and useful movements are possible, enhanced, as they are, by the use of scarves of different colours. Similarly, plain wooden rings of a suitable size and thickness, admit of many like movements; and, in lieu of dumb-bells, short pieces of wood, mounted with toy-bells, are usually adopted for the little ones.

Club-exercises are the most interesting and pleasing of the "mass" exercises practised in gymnasia, and even the veteran athlete never tires of them; but, considerations of expense, space, and the great difficulty of teaching the exercises (individual tuition being absolutely necessary in all but the simplest movements), preclude them from the elementary school. Every teacher should, however, learn them, and frequently make use of them. As a means of "setting up" the frame, and of giving a graceful bearing they are unrivalled; moreover, once learned, the exercises, like most physical accomplishments, are never forgotten.

Apparatus. Dumb-bells should be of wood, a few ounces only in weight, and are valuable, since the action of grasping them calls into play many muscles unused when the hands alone are moved. The handles of the bells should be of sufficient thickness to admit of a firm grasp, but the children should be instructed to hold them lightly, unless in actual motion, when the fingers and thumb should be tightly closed around them. Octagonal ends are an advantage, as such dumb-bells may be placed on the ground without fear of their rolling.

Bar-bells are straight rods of wood, of a thickness and length proportionate to the size of the children's hands, and having a wooden ball fastened on each end. They should be smooth and well finished, so that splinters are absent, and as light as possible, since their value lies in the guidance they afford to the arms, more than in the actual weight moved.

SCHOOL WORK.

PART II. ORGANIZATION AND PRINCIPLES OF EDUCATION.

CONTENTS OF PART II.

SCHOOL WORK.

ORGANIZATION. (Preliminary.)

Its Province.—Organization is concerned with the machinery and arrangements necessary for orderly and continuous work in school.

Dealing with a single child. To do the best that is possible for a child, or, what amounts to the same thing, to get his best out of him, no little planning and arranging will be required, apart from actual teaching,

1. **Choice of Subjects.** Work must be suited to the child's needs.

The *subjects* to be dealt with, and the *books* and *apparatus* used, have to be chosen with an eye (*a*) to the child's *present knowledge, powers, and requirements*, and (*b*) their leading value (1) as *knowledge or power, available at once* (*e.g.*, Reading and the information it gives), or (2) as *stores for future use* (*e.g.*, Geography and General information), or (3) as *mental gymnastic* training (*e.g.*, Arithmetic and Grammar).

[The Codes of the Education Department formulate a system of instruction in Elementary Schools.]

2. **Order of Importance.** Of the subjects which a child may profitably take up, some are relatively more valuable than others, according to the stage of development. These subjects should manifestly receive the greatest attention and the most time.

Reading, for example, should be made more prominent with younger children than Arithmetic, although they work at both subjects. With well-taught children of twelve or fourteen, the conditions would be reversed.

The same principle holds, not only for different stages of school-life, but with common-sense modifications for every day, and for every school meeting.

3. **Accordance with Nature of Mind and Body.** *Mind may be fresh or fatigued. Exercise is pleasurable*, mental *concentra-*

tion easy, and *acquirement rapid*, so long as *freshness lasts.* But *the strain may be continued until exercise is irksome;* in that case, acquirement is *meagre*, if it take place at all, *difficult* of attainment, and *demanding strong stimulus* to secure it.

"*Change of work is as good as play.*"

Shifting demand from one set of faculties to a different set operates as a form of relaxation.

Bodily feelings affect the mind. Discomfort prevents exalted mental activity.

If the organic necessities be not provided for, and if the instinct of activity be restrained to the point of uncomfortableness, good brain-work cannot be expected.

Facts of this kind would soon force themselves on the notice of a teacher. Certain **Deductions** would follow, such as

(*a*) Lessons requiring great concentration should come whilst the Mind is fresh.

(*b*) Length of lessons should be regulated by the severity of the demand they make. Demand should not be excessive.

(*c*) Work should be changed at intervals.

(*d*) Bodily restraint should not be continued until it becomes painfully obtrusive. Restraint and freedom, work and play, should alternate.

Dealing with a Class. He who had but one child to teach would soon have the necessity for attending to many such things as have been mentioned thrust upon him. If he attempts to deal with more than one at a time an additional set of difficulties is introduced, and has to be grappled with in connection with every extra scholar.

So long as the teacher has but one scholar, he can give undivided attention to him. But if there be more than one, and these incapable of doing the same work, the teacher has to consider how he can comply with such fundamental conditions as we have already mentioned, in the case of *every* child, and how he may supervise, and expend his own time and influence to the best advantage of *all*.

Writers on Education often deal with their subject as though the teacher were concerned with only one child. What they say is often inapplicable to groups (classes and sections), and still more to large numbers (schools as a whole).

Every child must feel the teacher's hand. Supervision must be adequate and constant, if work of the best kind is to be done.

It is desirable that each child should feel his teacher's eye and attention are fixed on him. Although this can only be reached approximately, yet *judicious planning* may do much. Order, Attention, Diligence, Steady Application, depend on the teacher's supervision.

Some subjects require the teacher's personal management and direct superintendence to make them effective; *others may be left in part to the pupils,* (1) if they be properly started (*i.e.*, if they know what to do, and how to do it), and (2) if they feel themselves under the teacher's eye.

Therefore, he will himself take Grammar, or any subject demanding larger grasp, superior teaching, and higher power of directing and keeping attention to a definite line of thought. But he may allow or direct children to work for themselves in Copy-book writing, if he has shown them how to go to work, and if he contrives to see that they carry out his directions whilst he is more actively engaged elsewhere.

It may be that *some children can be grouped,* and taught together, in a few if not in all the school-subjects.

If so, a great economy of time and labour is manifestly effected.

In such subjects as Dictation and Oral Spelling, *a pupil-teacher may often be deputed to do what else would fall on the teacher,* and thus liberate him in part to attend more directly to other pressing matters.

Using *young teachers* in this way seems to be an essential where other assistance is not available.

Arrangements must be made to secure *isolation,* that each child may do his work without disturbance from his schoolmates, whilst *yet* he is *under efficient supervision.*

Suitable *books and apparatus* must be provided.

The *room, fittings, and premises* should be suited to their avowed purposes.

The Size of a School modifies the action and the form of the requirements just mentioned.

In a small school—

Supervision is more easy; children can be brought *more often and more*

closely under the teacher's direct action; groups will be *small,* but the members of a group will be *uneven in attainment,*—the teacher too must deal with two or more of these groups together at times, in spite of their unevenness; *pupil-teachers* will be freely employed; mechanical arrangements for *isolation* are scarcely needed, because of easy supervision; defects in *premises,* though serious drawbacks in any case, are more readily obviated; *books and apparatus* will be less elaborate, though they should be sufficient.

In a large school—

The head-teacher's special duty of *detailed supervision* is much more difficult; the necessity for *private records and memoranda* about classes, subjects, and individual children is imperative, if he is to reach all; *classification* is more perfect; the *teaching staff* is better; *isolation* of sections is more complete; and *premises* and *apparatus* generally adapted closely for school purposes.

Object and Meaning of Organization. School organization has for its aim the employment of every person connected with the school, in the most profitable manner, throughout the school day.

Organization is that set of arrangements which is intended to fulfil this purpose.

It includes placing every scholar where he can obtain most good (*Classification*); providing him with constant work, right in kind, and proper in amount (*Routine-plan, Time Table*); furnishing him with the best available teacher, (*Teaching Staff, and its arrangement*); keeping accounts of his attendance, progress, &c. (*Records, Registers*); and securing favourable external conditions (*Schoolroom and Appliances*).

All these things have to be thought of together, and considered with reference to one another.

The Organizer's business is to construct a machine which shall meet these requirements, and to put it in going order. This being done, he has to supervise and adjust its working from time to time, so as to get the most out of it, with the least possible friction.

Good organization is known by the *completeness* with which it reaches every teacher and scholar, and the consequent *quality* of the results it produces, as well as by its apparent taking care of itself, or by the *smoothness, exactitude,* and *machine-like regularity* of its working.

It should provide for all details, should work without a hitch, and without noticeable interference. Where active meddling, additions, curtailments, and amendments are needed, Organization is imperfect. The best of our systems satisfy the test we have set up.

Organizing ability is the third great aptitude a school teacher should possess.

Power to *control*, and power to *teach*, have been dealt with before. *Organizing power* is a form of business capacity, which is useful to every teacher, whilst it is indispensable to the head teacher of a large school.

Various systems of Organization have been employed from time to time. Each was framed and worked according to educational aims, appliances, and possibilities, at its own period.

As education has received attention, School Organization has altered for the better; a marked tendency towards uniformity is one consequence of improved opinion, consequent mainly on systematic inspection and recommendation by Education Departments. Schools under different departments, however, commonly have distinctive features in their organization.

Thus, English, French, German, and American schools differ materially in plan.

A brief sketch of the leading systems of Organization which have prevailed in England during the present century is offered, with a view of enabling students to form an opinion about the mode in which existing plans have been elaborated, and of putting them in a position to appreciate the aims, the inventiveness, the skill, and the general work of the men who are mentioned.

Bell's "Madras System" was so named, because it originated at the Military Male Orphan Asylum, Egmore, near Madras, of which institution Bell was president, 1789—1797. The notes which follow are taken chiefly from "Bell's Manual," published in 1834, under the auspices of the National Society, after the system had been matured. Bell died in 1832, and was buried in Westminster Abbey.

"In the earnest discharge of his functions at Madras, Bell hit upon a discovery, by which any institution, however numerous soever, may be conducted by a single superior or superintendent. On this principle he

new-modelled the Asylum, whereby the school, then consisting of two hundred boys, was entirely taught by fourteen teachers and assistant teachers (from seven to fourteen years of age) selected from the scholars themselves." This probably took place about 1791.

Bell is said to have observed the children in a native school, seated on the ground, and writing in the sand. Struck with what he had seen, he set a boy, John Frisken, to teach the alphabet on the same principle in the Madras Institution, a task which Frisken accomplished readily. Other boys were then employed as monitors in other classes, and with other subjects. Gratifying results followed, and Bell was consequently led to extend and elaborate the system.

Impaired health drove Bell from India, but before he left he wrote a "final and compendious report" on his discovery (1796), which he republished in London next year, under the title of "An Experiment in Education, made at the Male Asylum at Madras, suggesting a system by which a school or family may *teach itself* under the superintendence of the master or parent."

The *National Society* was formed in 1811, and Bell's system was adopted in its schools throughout England and Wales.

Leading Features of Dr. Bell's Organization. Speaking of the "essential principle" of the Madras System, the Manual says, "There is a *Faculty*, inherent in the mind, of conveying and receiving *Mutual Instruction*, and a pleasure attached to this reciprocal intercourse. It is the development, exercise, and use of this faculty that constitute the Madras System."

"The entire *economy* of the Madras school is conducted by a single master—through the medium of the scholars themselves." The master has to supervise, direct, guide, and energize the whole—he conducts "all the operations of the school, with, through, and by monitors." He will take classes, and distribute his influence where he is wanted. At first the master's business is to keep all at work rather than teach himself. He instructs his monitors out of school hours.

In an extract from the report of the Madras Asylum, dated 1796, the four highest classes, containing 34, 25, 25, and 11 boys respectively, are represented as under the charge of monitors, the largest and highest class having a boy "assistant" also. The rest of the school, containing 91 children, was under the charge of *John Frisken* (age 12 years 8 months), who had eight "assistants" (of ages varying from 11 years 6 months, to 7 years 9 months).

"The school is arranged into forms or classes, each consisting of about 36 [25 to 30] members of similar proficiency. The upper classes are often more, and the lower less, numerous." Classes were placed on the floor in squares, rectangles, or semicircles, as was most convenient.

Place-taking was freely used to maintain alertness and emulation, and the higher classes were constantly fed from the lower. "The scholar ever finds his level by a constant competition with his fellows, and rises or falls in his place in the class, or in the forms of the school, according to his relative proficiency." Large classes are said to have manifold advantages, chiefly in economizing teachers, and lightening the task of superintendence.

"To each class is attached a *teacher*, and, if numerous, an *assistant* teacher, who are constantly present with the class, and responsible for its order, behaviour, diligence, and improvement. The lower classes are generally paired off into *tutors* and *pupils* (a superior boy tutoring an inferior) under the direction of the teacher. In large schools, an *usher* or superior teacher is often set over every three or four classes, and a *head-usher* over the whole school." Later on, a teacher and an usher were commonly appointed to each class, one to teach, the other to maintain order. Tutors were dispensed with.

"*Monitors* are also appointed to the charge of the books, slates, pencils, paper, pens, ink, and of the various departments and offices of the school-room: or the ushers may perform these services, or rather see them performed."

"In addition to these are *registers*, and if necessary, a *jury*." Every child's progress "in Reading, Ciphering, and Religious rehearsals," was recorded in the "*Paidometer*."

All serious offences were to be reported, and the master either dealt with the matter at once, or entered it in the "*Black-book*." This book was produced at stated periods before the whole school; faults were commented upon, and what was said had great moral weight, being based on actual occurrences at school. Bell attached much value to this disciplinary agent, and with reason.

Children were *classified* by Reading alone, and were kept in the same classes for all subjects.

Buildings, &c. A *rectangular* building was recommended, with the bottom of the windows about five feet from the floor; the windows should open at the top. *Forms* were provided for the separate classes, which were actually placed as three sides of a rectangle on the floor. A *desk* for writing upon was placed against the walls, along the sides of the room. In some wide schools, a double-desk was also placed lengthwise in the middle of the room. A *raised platform* was erected for the master, from which "he overlooks the whole school, and gives life and motion to every member of it." Fixing the master thus deprived him of much of his power; he would do more good in passing from class to class and teaching as far as he could.

Bell's remarks and hints on Discipline and Method are worthy of careful reading and thought.

Few of the detailed methods he recommended survive now, but his leading ideas, *causing pupils to work*, and *securing thoroughness by repetition*, will ever be essential principles in sound systems of education.

The Lancasterian System is so named from Joseph Lancaster, born in 1778, son of a Chelsea pensioner, and "possessed of considerable talents for the instruction of children. Owing to the expense attendant on the common methods of teaching," many poor children were without education. "In the year 1797 Lancaster began to devise economical plans, which, in the course of years, he so far perfected, as to show that one master might conduct a school of several hundred children; the progress of the pupils being much more rapid, and the expense very much less, on this, than on the old method." (Dunn's "*Sketches*" and the "*Manual*" issued by the British and Foreign School Society, in 1839, are quoted from, in this and several of the following paragraphs.)

In 1798 he began teaching on his own account in his father's house. "My father gave the schoolroom rent-free," says Lancaster, "and after fitting up the forms and desks myself, I had the pleasure, before I was eighteen, of having near ninety children under instruction, many of whom I educated free of expense. [Some of the poorest he provided with a meal also.] As the number of scholars continued to increase, I soon had occasion to rent larger premises."

On the outside of his schoolroom he placed the following printed notice: "All that will may send their children and have them educated freely; and those that do not wish to have education for nothing, may pay for it if they please." This filled his school, and a new schoolroom was provided, chiefly by the aid of the Duke of Bedford and Lord Somerville, who, with a few others, had been interested in Lancaster's work. This room was situated in the Borough Road, London, S.E.

"The children," he adds, "now came in for Education like flocks of sheep; and the number so greatly increased, as to place me in that state which is the mother of invention. The old plan of education, in which I had hitherto been conversant, was daily proved inadequate to the purposes of instruction on a large scale. In every respect I had to explore a new and untrodden path." "The common modes of tuition did not apply; and in puzzling myself what to do, I stumbled upon a plan similar to thine."*

* Lancaster to Bell, Nov. 21st, 1804.

His school of a thousand children, "ably and zealously conducted by youths trained under his own eye, and imbued with his own enthusiastic spirit," rapidly became an object of public attention. "It was visited by foreign princes, ambassadors, peers, commoners, ladies of distinction, bishops and archbishops." The king gave him an audience, encouraged him by his sympathy; he also, with the queen and princesses, subscribed to Lancaster's funds.

Money came flowing in at this time, in what appeared to Lancaster to be a perpetual stream. Unaccustomed to managing money, he expended it with thoughtless profusion, and soon became greatly involved. In 1808 his affairs were transferred to trustees, a fixed sum allowed him, and an account of receipts and expenditure kept. He soon chafed under this arrangement, quarrelled with his friends, broke away from the Institution he had founded, and opened a private school at Tooting, which proved a failure. In 1818 he went to America; where he experienced many vicissitudes, until in October, 1838, he was run over in the streets of New York; his ribs were broken, and his head very much lacerated; these injuries caused his death.

The Committee who took charge of Lancaster's affairs in 1808 adopted the name of the "Royal Lancasterian Institution." This name was changed in 1814 to the "*British and Foreign School Society.*"

Organization of a Lancasterian School.

The *schoolroom* was a parallelogram, the length about twice the width. The *windows* should be at least six feet from the floor. The *floor* should be *inclined*, rising one foot in twenty from the master's desk to the upper end of the room, where the highest class is situated. The *master's desk* is on the middle of a *platform*, two to three feet high, erected at the lower end of the room. *Forms and desks*, fixed firmly to the ground, occupy the middle of the room, a *passage* being left between the ends of the forms and the wall, five or six feet broad, where the children form *semicircles* for reading.

The school was *governed and taught* by the agency of monitors. In large schools there was a *head monitor*. The *monitor of order* was the deputy of the master, and was responsible for the order of the school. *Class-monitors* superintended the *monitors of drafts*; *inspectors* tested boys' fitness for promotion. Changes in name and in points of detail were introduced by Lancaster's followers, but the essential feature—government by monitors whose duties were clearly laid down—remained. Note that Lancaster's drafts had one monitor only, Bell's classes had two.

To stimulate effort and reward merit, Lancaster used *place-taking* abundantly. He also had *medals* and *badges of merit*, which boys who held office in the school, or who distinguished themselves for good

conduct, or in their school-work, used to wear. *Tickets* could be earned too; these had a trifling pecuniary value, and might accumulate until they amounted to a considerable sum for boys in those days, when they were commonly exchanged for some useful article. *Prizes* were given to excess; Lancaster used at times "to deliver one or two hundred prizes" at once, with a ceremony that would attract boys and excite emulation. His *punishments* were original, but often ludicrous and objectionable; this arose in part from his strong aversion to corporal punishment.

Frequent changes aided Discipline. His *code of commands*, followed by exact movements, served the same purpose. Noise was inevitable when many classes were reading at the same time, but silence was obtained at once when the signal was given.

Class-lists and various other *Registers* were kept.

Children were classified on a dual principle (1) according to their ability in Reading, (2) according to ability in Arithmetic.

This was a distinct advance on previous plans. *Class-teaching*, instead of individual work, in Arithmetic was a special feature in Lancaster's organization.

Unlike Bell, Lancaster preferred *small classes*, as they allowed more frequent individual practice. Hence his plan of *breaking classes into drafts* for reading and arithmetic.

Lancaster's devices for providing cheap yet effective Reading lessons, examples in Arithmetic, and lists of words for Dictation should be noticed.

The arrangements and appearance of a school organized on Lancaster's plan, but with the modifications resulting from several years' experience, can be gathered from the following summarized description of the interior of the British and Foreign School Society's School, Borough Road, in 1839:—

The general monitor of order stands on a high stool at the lower end of the room, facing the scholars to whom he gives the necessary orders.

The monitors of classes take up their position to the right of their respective groups. All except the monitors are seated at the desks which occupy the middle of the room.

The sand desk accommodates eight children, and is placed in front of the writing desks. It is about half the length of the desks behind it. Its height is two feet, the height of the form is fourteen inches, the horizontal distance between the desk and its form three inches. The form is six inches broad, the desk nine inches, and placed horizontally. A space of

five inches in breadth is boarded off to confine the sand, leaving four inches to support the child's arm. A hole, extending across the sand space half an inch broad, is made near to one end of the desk, to allow the superfluous sand to fall off into a drawer. The sand used is dry, and levelled with a hand smoother.

The writing desks seat seventeen or eighteen scholars. Their height varies according to the size of the children; they are nine inches broad, and incline two inches out of the horizontal plane, a bead runs along the lower edge to prevent the slates from falling over.

The forms also vary in height; they are six inches broad.

The iron supports for the forms are straight, but for the desks they are adjusted to the knee.

At the right-hand end of each desk is a standard (a kind of notice board), from which the class marks are suspended. It is of the same breadth as the desk above which it rises, about eighteen inches. It is firmly fixed in the floor.

Small boards, called telegraphs, are placed at intervals to the right of the desks. They are about six inches long, and four inches broad, and are made to turn freely on an iron rod about twelve inches in height, the lower end of which is firmly screwed into the top of the perpendicular standard just referred to. Upon one side of the board is inscribed the number of the class, and on the other the letters E X. The E X enables monitors to inform the General Monitor that they have examined the slates.

When slates are exhibited for monitorial inspection, the lower edges rest in the bead (groove) of the desks, the upper corners being held by the children.

Lesson sheets not in use are suspended from rails. The upper rail is fixed against the wall, at the distance of six feet from the floor. The lower one is parallel with it, and at four feet from the floor. The rails are six inches wide, and an inch thick.

The front boy in each draft wears a badge upon his right breast.

The draft stations are indicated by lines cut in the floor of the space left between the desks and the walls. The form of the lines is that of a semicircle of a radius of two feet, connecting the ends of two perpendiculars of eighteen inches. A space of two feet six inches is left between the semicircles.

Strips of baize were hung from the ceiling. They were so arranged as to present somewhat the appearance of the "flies" of a theatrical stage. They checked the reverberation of sound.

The Monitorial or "Mutual" Systems of Bell and Lancaster were the first successful attempts to reach the masses of the people.

Monitors had been employed before. Quintilian recommends them; Comenius and Pestalozzi used them. But Bell and Lancaster appear to be the first who managed large schools with monitors alone, and to these organizers belongs the honour of devising plans on which a national system of education could be based at their time, and of demonstrating their practicability.

It is noteworthy that both managed to secure the hearty co-operation of their boy-monitors.

In estimating the results they produced, the character of the time must be noted.

Their aims may in one sense seem low, and the results meagre, if judged by present conditions. They worked, however, before the days of Education Departments, amidst widespread ignorance, with the meanest appliances, and with generally inadequate resources.

Both had noble ideals about the function of the school. Bell says it should "turn out good scholars, good men, good subjects, and good Christians;" Lancaster felt it should give a Christian Education, and "train children in the practice of such moral habits as are conducive to the welfare of society." Both kept their scholars well under control, and kept them constantly at work. Reading, writing, elementary arithmetic, together with Bible knowledge, was nearly all that was seriously attempted in the way of instruction; but the amount of moral good that was achieved by the school teaching and school discipline together was inestimable.

Great developments and improvements in school curricula, in methods, and in organization have been introduced since, but these men laid the foundation on which others have built. Monitors could not *educate*, they could only keep their fellows at work.

Each had wondrous faith in the efficacy of his system.

Among Bell's extravagant statements are: "If you and I live a thousand years, we shall see this system of education spread over the earth." "In a school [the Mutual System] gives to the master the hundred eyes of Argus, the hundred hands of Briareus, and the wings of Mercury. In other words, it gives to him indefinite powers, and enables him to instruct as many pupils as any school will contain."

"By the aid of monitors," says Lancaster, "one master can teach a thousand boys." Lancaster's excitable and enthusiastic temperament, joined to his strong religious convictions, led him to make strange allusions and claims. He speaks of himself as an 'Elijah,' 'a chosen vessel,' 'a David before Goliath,' 'a Joshua before Jericho.'

A controversy arose respecting priority of claim in introducing the system. This was afterwards embittered by sectarian jealousy, and led to an estrangement between Bell and Lancaster, who had been on friendly terms.

Bell was first, but Lancaster seems to have elaborated his earlier plans independently, though he frankly acknowedged his indebtedness to Bell's publications later on. Mrs. Trimmer, in 1805, published a pamphlet, in which she urged that Lancaster's system was antagonistic to the National Church.

Soon the country was divided into two camps; speeches, sermons, magazine articles, and pamphlets appeared on each side; the clergy as a rule opposed Lancaster, whilst the Dissenters sided with him. After a time, the *National Society* was founded, and its schools were organized on Bell's plan. The schools established on the principles of the *British and Foreign School Society*, on the other hand, were organized on Lancaster's system. By the efforts of these societies the country was covered with schools, and education brought close to the doors of the people. Though this education was of a low type, yet the general conditions were an immense advance on those which prevailed before.

The monitorial system was introduced into Scotland, Ireland, America, and various continental countries; it did good work in good hands, but it gradually fell into disuse.

Failure occurred, as it always will, when masters were slaves to "the system," when they were satisfied with mechanical arrangements and routine work, or when they did not study their pupils, and get down to the Principles of Education.

The "**Glasgow System**," or, as its originator named it, the "**Training System**," was developed by David Stow, a young merchant, who, in his anxiety to "stem the torrent of vice and ungodliness, turned his attention to the young," and established a school on Sabbath evenings in the Saltmarket, "the very St. Giles of Glasgow," in 1816. As he worked on, the conviction forced itself upon him, that the training of the street more than counteracted the training he gave. In 1826 he started an infant school, in organizing which he was helped by Wilderspin; David Caughie was the master. Some years later, a juvenile school was added. To these schools students were admitted, and in them

Stow carried on his observations, and elaborated his plans for years. In 1836 a Normal Seminary was established in Dundas Vale, Glasgow; here Stow introduced his system of teaching children and training teachers. Circumstances forced him to give up this post, and in 1845 a new institution, the Glasgow Free Church Normal School, Cowcaddens, was originated. Over this establishment Stow presided till his death in 1864. ("*The Training System of Education*" by D. Stow, 11th edition, is the chief authority for the following paragraphs.)

> "The Training System *cultivates the whole nature* of the child, instead of the mere *head*—the affections and habits, as well as the intellect."
>
> "The peculiarities of the Training System may be stated in one sentence, as—*Picturing out in words, direct Moral Training, with suitable premises, and the various practical methods by which these objects are accomplished, under well-instructed and well-trained masters or mistresses.*" It is useless to have "the machinery without the *skilled workman*, or the well-trained workman without the *suitable premises*."

Teacher.—Training requires an accomplished teacher.

Monitors cannot do the work which Stow thought essential. He held that children might perform little offices for the master, but that they should not be used as monitors. In this condemnation of monitors with their necessarily low-class work, and his advocacy of adult teachers with larger power and higher aims, Stow did much towards preparing the way for the pupil-teacher system, and for yet later developments.

Premises.—Suitable premises are needed.

The necessity for supervision led Stow to place his pupils in parallel lines, and afterwards in a *gallery*. He afterwards came to regard the gallery as indispensable, and had it made large enough to seat all the scholars. Desks were provided to seat a few children, who could be drafted off at times for writing. (In Robson's "*School Architecture*," page 13, a plan of a school on Stow's system is given. "A gallery large enough to contain say two-thirds of the scholars, occupies one end of the room; there is an open floor space having about twice the gallery area; two long desks are provided, one on each side of the room; at the end opposite to the gallery are two class-rooms, each provided with a gallery and a desk." Modifications were frequent, but the main features were kept. The Wesleyans especially used to arrange their schools on Stow's plan.)

The need for physical exercises, and "plenty of fun," coupled with

training, demanded a large, well-ordered, well-furnished *play-ground* or "*uncovered schoolroom*." In this the teacher was to spend much of his time, supervising, and occasionally joining in the play, and utilizing incidents for moral training sometimes on the spot, at other times in school.

Schools were mixed, Stow's idea being that boys stimulate and improve the girls intellectually, whilst girls refine and improve the boys morally.

The school was graded; infants, juniors, and seniors, were dealt with separately.

Training.

(*a*) *Moral Training* was the grand aim throughout Stow's system. "For these purposes, and especially for resisting and subduing the volcano of moral depravity which was ever active around me, I laid down certain rules for my guidance, which eventually proved successful, the most important of which were,—First, that I would never *strike*, whatever degree of provocation might be given; and, secondly, that I should never *expel*, however unruly the children might prove. The various methods to which, upon these principles, I was compelled to resort, in order to obtain attention and to maintain discipline, obedience, and good order, and, at the same time, control and subdue my rising feelings of indignation at their wayward conduct, led to the working out of the great principle of *Moral Training*. These self-restraints compelled me of course to use moral and intellectual, instead of physical, means of discipline."

The *religious element*, permeating the whole system, and influencing all the teaching, is a noteworthy feature. *Bible lessons*, many of which were admirable, were used extensively. It should be noted, however, that "Moral Training" and "Picturing out in Words" are not necessarily confined to Stow's system, though he deserves the credit of bringing these essentials prominently forward, and keeping them to the front. For his persistence here, and for his showing the possibility of doing much towards realizing these aims, and thus raising education to a higher and truer standard, the world owes him much.

The teacher was distinctly put in loco parentis towards his scholars; the *fatherly* element appeared in his intercourse with them; the teacher also studied the child's individuality, and managed to *get at* him better than some of us do. Stow regarded observation of the bent of the child's affections as essential.

What was observed in the "uncovered schoolroom" was afterwards used as texts for comment, or in illustration of moral and religious lessons, and generally for *moral training* when children were gathered upon the gallery.

(*b*) *Intellectual Picturing out in Words* was intended to enable children to form a distinct idea or mental picture. Analogy and illustrations drawn from familiar things and circumstances were to be used, instead of verbal synonyms, paraphrases, and definitions. Actual cases or examples of "intelligence," "promptitude," &c., would be introduced rather than (or in addition to) the "meanings" of the words. This principle prevailed throughout, and Stow's Manual contains many illustrations. It may be mentioned that, in adverting to Our Lord's method of dealing with the Pharisees on the question of tribute-money, Stow remarks, "He did not *tell*, but *trained*." Stow also instances the parable of the Good Samaritan as a model of "*picturing out*." *Diagrams*, *gestures*, and any reasonable device for securing the formation of a mental picture are aids to "picturing out in words."

Sympathy of Numbers was strongly insisted on. Stow regarded it as "the most influential of all practical principles," giving to "the schoolmaster a peculiar advantage over every other class of persons. When oral lessons are properly conducted, all are stimulated and benefited by the power of sympathy of numbers." *Large classes* were preferred, on this account, for training. *Simultaneous teaching* was a prominent feature. The employment of adult teachers allowed large classes and collective work. It is generally thought, however, that oral gallery-teaching was carried to excess by Stow.

Questions and Ellipses were to be mixed; Stow was a great advocate for abundant use of Ellipses in simultaneous lessons. *Intellectual* teaching was to be aimed at; "the subject matter of the lesson was to be analyzed and familiarly illustrated, only the facts not previously known" were to be told. "This secured beyond doubt that the information was possessed by the pupils, and is the most distinguishing feature of the intellectual department of the Training system." Ideas were to precede words. Children were not to be told, but *led to discover*. Teaching was to proceed from outline to details.

Currie remarks that "the system is not available for the ordinary type of common schools." It is fully applicable only in large schools, where large sections can be made. In other cases, children of very different powers would be treated together, to the disadvantage of some at least.

Stow's grandest work was done in connection with the training of teachers.

Not a few of the veterans who are still at work, and a goodly number of the workers of the middle of the century, both at home and abroad, received their training from Stow. "Criticism Lessons" were a great feature in Stow's system of training. He also combined lessons on prin-

ciples with such observation and practice as were necessary to "learn the method."

The Tripartite System was suggested by Mr. Moseley, in 1845. It was adopted in many schools of fair size, but has now almost gone out of use.

The scholars, the school-work, and the schoolroom were arranged on a tripartite plan. "The essential element of the plan is the separate room for oral instruction, the devotion of the labours of the head-master chiefly to this object (relieved occasionally by the second master or pupil-teacher, with whom he exchanges duties), and the throwing of the children in three great divisions, of fifty or sixty, successively into that room for an hour twice a day for the purpose of that instruction." (*Minutes of Council*, 1845.)

The room was usually an oblong divided into three parts by movable curtains; or if there was a separate class-room, the main room would be divided into two parts only.

School work was classed in three groups of subjects.

(1) *Those requiring the head-teacher's oral instruction, e.g.*, Scripture lessons, and all lessons which demanded advanced teaching power to make them effective. These lessons would be given in the *class-room*, which was often fitted with a *gallery*. The head-teacher would not *confine* himself to this room, but would exchange frequently with other teachers. Part of the head-teacher's duty was to *examine* the children on what he and the other teachers had taught them.

(2) *Silent occupations*, such as Writing, slate Arithmetic, Drawing, Memorizing, Dictation. These lessons would go on in a *group of desks*, and the division was under the charge of a *pupil-teacher*.

(3) *Reading* was conducted on an *open floor space*, by an *assistant* master or mistress, and *monitors*.

Lessons usually occupied an hour, and the classes were then rearranged in other groups.

Remarks on the System.

The division of the work into thirds, and arranging for one-third standing and two-thirds sitting, was good. *Due change of work and of posture* was provided; the physical conditions for obtaining good results were conformed to.

The double function of Education, *training Faculty, and imparting Knowledge*, was kept in view. A capital feature was bringing every child into direct contact with the head-teacher at every school meeting.

Keeping each teacher to one part of the school had its advantages and disadvantages. Concentrating their attention on one, or on a few subjects, *they were able to teach* them *better.* It is questionable, however, whether elementary schools get much real advantage here. Teachers could *not feel that direct responsibility* for a class, which they would do if they had entire charge of it; nor would *sympathy* between them and their scholars be so close. So far as *training for young teachers* was concerned, the plan shut them up to dealing with too few subjects. There was some advantage in bringing children in *contact with different minds*, by shifting the classes as described.

The strain on the teacher was heavy, especially upon the head-teacher.

The plan was suited to schools of fair size only. In large establishments it was necessary to have two or three separate tripartite arrangements side by side, or placed variously with respect to one another. The arrangement of fittings, gallery, desks, open space, was afterwards utilized in many schools worked with pupil-teachers. They kept to a class, and moved from place to place with it; the head-teacher distributed himself over the school, and did not keep so much to one part as Moseley urged. Pupil-teachers, if well supervised, obtained a good training in this way. Some time was occupied in changing, yet if the changes were well done, and singing occasionally used, they acted like a recess. Capital work could be done in the middle of a large school on this plan; it was well to have separate rooms for infants, and for advanced classes.

The Pupil Teacher system is "the backbone of modern English elementary education."

It provides schools with superior monitors, and the country with a supply of teachers.

The essential part of the plan is to divide a school into sections or classes of convenient size, for the head-teacher to take the heaviest and hardest to work upon himself, and to allot other sections to his pupil-teachers, adapting the size of the class, as far as he can, to the power of the pupil-teacher who has charge of it. The head-teacher directs and supervises the whole.

"The Battersea Method," or the **"Privy-Council Method"** was promulgated in a Minute by Sir J. P. K. Shuttleworth, Secretary to the Committee of the Privy Council. The arrangement was tried in the practising schools connected with the Battersea Training College.

Groups of desks, three or four deep, are ranged near and parallel to the long wall of an oblong room, in such a manner that the children occupying

two adjacent groups, could be formed into one section if desired. The groups were ordinarily separated by movable curtains, and each was under the charge of a pupil-teacher. By drawing back the curtain, two groups were at once thrown into one.

Rooms specially built for this plan are oblong, from sixteen to twenty-two feet wide; the greater width allows floor-space for drafting the class, &c., when needed. Each group is separated from its neighbour by an alley, eighteen inches wide, for the passage of the children; three inches is allowed for the curtains.

Attempts to utilize the rectangular buildings, erected on Bell and Lancaster's plans, and to convert them on the Battersea plan, were often made, but seldom with success.

A common arrangement produced in this way was the *Double Bank* plan, in which desks were grouped on each of the long sides of the school. Children consequently faced one another, and the teachers of opposite classes often stood close together.

Up to a few years ago, it was common to find large schools worked by a head-teacher and his pupil-teachers. Adult assistants are employed more largely now, as well as pupil-teachers. Large English schools of recent erection, show modifications of the Privy Council plan; the German element of separate class rooms is often met with, and many varieties of arrangement are found.

In these large schools, an assistant, with one or two pupil-teachers, can work a division as though it were a separate school, and the large room with its detached class-room can be fitted accordingly. Many school buildings are made up of such aggregations.

Other admirable buildings have a large hall where the whole school may meet, and from which children can at once pass into isolated class rooms.

For small schools different arrangements have to be made.

In Victoria the country schools are fitted on the Battersea plan, but the desks are shorter. A gallery is also put at one end of the room, in line with the desks. Most of these small schools are managed by a head-teacher alone.

Some infants' schools are managed on the same plan.

"The Prussian System," *the* **"separate class-room system,"** provides a separate room, and a skilled adult teacher for each class.

This plan prevails throughout Germany, and is common in other countries. It has been the subject of much discussion and laudation of late years.

Most of the larger German schoolrooms are handsome buildings consisting of *a collection of class-rooms*, six or more in number, usually entered from a corridor. Additional rooms are often provided for drawing, and for special lectures, especially in the higher schools. All these rooms are fitted with desks and benches, about seven deep, adapted to the height of the scholars. There are no galleries.

A *qualified adult* (usually a male) teacher is placed *in charge of each class*, of about forty to fifty scholars; his station is on a raised platform.

The *sexes are taught separately*, except in rural districts, where, as in other countries, mixed schools are a necessity. Other modifications would be necessitated too in small schools.

Remarks on the System.

Each class is completely isolated; distractions are shut out as far as can be. If each class have a good teacher, the conditions for sound work and progress are well met.

The school, consisting of a collection of little schools, offers an obstacle to rousing *esprit de corps*. There is an advantage in collecting scholars, or large classes, in a common room, to be addressed by the head-master. (Where an *aula* exists in Germany, it is seldom put to this use.) The expense of building, and then of providing reliable teachers (without whom the system is unworkable) is too great. The system is inapplicable except in large schools.

> "Men go hastily to Germany, and see a German school taught only by adult teachers, a teacher to each separate class; or they go to Edinburgh, and see a similar plan in operation in a number of excellent schools; they see or hear besides that a similar plan is in operation in the expensively appointed and efficient schools which are among the shows of some towns in the United States, and they come to the conclusion that modern science is opposed to the employment of pupil-teachers, and requires that only adult teachers should have any charge of children. Whereas the fact is that, for *Elementary Schools*, the pupil-teacher system is the only true scientific system; that the separate class and teacher system is the very old system, which has been superseded because of its ineffectiveness, and that where this system succeeds, it is under conditions altogether different from those which belong to the elementary schools of this nation. . . . . It may be practicable in Germany, where thirty pounds a year in gross payment is good pay for a teacher, to have a

public school manned only by grown teachers. In this country, where the teacher is paid six times the amount, this would not be possible. Even in Germany the result is that the classes under the charge of each teacher separately are far too large for thorough and efficient teaching at all points, and through all the school time." *Rigg.*

REGISTRATION.

Use and Importance. Accurate Registration serves important purposes.

1. It supplies *data affecting the school,* some interesting, and all more or less valuable. Well-kept registers are a school-history, from which its condition at any time can be gathered, and compared with its present state.

2. *Local Boards* are supplied with information, which should help them in discharging their functions. These bodies often have forms and registers of their own.

3. *National purposes* are served, when reliable statistics are obtained about the age of scholars, the number under instruction, the average attendance, the numbers in the various classes, the amount of school fees, &c. Educational legislation is based on such statistics.

Completeness, Convenience, Accuracy are chief points in Registers and Registration.

Completeness is aimed at by keeping several registers, each for a specific purpose. The amount of detail introduced into these registers varies; complexity often arises from the desire to have a full record. A set of registers should, at the least, supply all the data required by the Education Department.

Convenience depends chiefly on arrangement, but partly on completeness. For example, it is more convenient to have morning and afternoon attendances marked on the same horizontal line, or to divide the spaces set apart for each day by vertical lines; this arrangement facilitates calculating morning and afternoon attendances. So, it is well to collect weekly totals in contiguous columns, instead of allowing them to be scattered over a wide page. It is a great convenience, too, to have the details required by the Department entered in a register against a boy's name. Different modes of meeting this requirement are adopted.

Accuracy is the first essential in Registration.

Official Records. The Education Department, in an Appendix to the Revised Instructions to H.M. Inspectors, has laid down the following regulations for the keeping of school records.

1. The Code requires that managers of schools shall provide suitable records — registers, log-book, and cash book (Article 8); and, before any grant is made, the Education Department must be satisfied "that the admission and daily attendance of the scholars are carefully registered by or under the supervision of the principal teacher, and periodically verified by the managers; that accounts of income and expenditure are accurately kept by the managers and duly audited; and that all statistical returns and certificates of character are trustworthy.

2. The necessary books should be bought out of school funds and be the exclusive property of the school.

3. All entries must be original, not copied from slates, papers, or memoranda of any kind. They must be made from the first in ink. Pencil entries of any kind are altogether forbidden. There must be no erasures nor insertions. If it is necessary to make any correction, this should be done in such manner that the original entry and the alteration made are both clear on the face of the record. The entries should be consecutive; no blanks should be left between them.

4. The name of the school should be distinctly written on the cover or title-page of each book.

5. In every school or department there should be—

(*a*) A register of admission, progress, and withdrawal.

(*b*) Attendance registers.

(*c*) A register of summaries.

The pages of these registers must be numbered consecutively. Each register should be signed on the title-page by the correspondent of the school, with the date at which it was supplied to the teacher. No leaf should be withdrawn from, or inserted in, any register. The registers presented to Her Majesty's Inspector must be the original registers, which have been in use throughout the year, and on which the returns are based. The head teacher of a school or department is, in all cases, held responsible for the proper keeping of the records of that school or department, and he should not delegate to any subordinate the keeping of any of these registers, except those of attendance. A pupil teacher who has completed his second year may register the attendance of his own class. A first or second year pupil teacher may not be employed in registration.

6. The managers are held responsible for the efficient verification of the registration. Form 9 contains certificates to be signed by managers,

(1) that the school registers and books of account have been so kept as to leave no doubt respecting the accuracy of the entries in this Form that are taken from them; (2) that the attendance registers have been invariably marked on each occasion the school has been open, and closed before the commencement of the minimum time specified in Article 12; and (3) that the accuracy of the registers has been tested by the managers on several occasions and the result recorded in the log-book. In order that managers may be able to give these certificates, they are required to visit the school without notice, at least once in every quarter, at some time when the attendance registers should have been marked and added up for that meeting of the school and to check the entries. This should be done by ascertaining (1) that each of the children present at the time of marking has been marked present, and each of the children not so present has been marked absent; (2) that the totals of these attendances have been duly entered; (3) that the instructions for the keeping of these registers, hereafter laid down, have been fulfilled; and (4) that the admission register and summary have been properly kept up to date. The result of each such visit should be entered by the visiting manager in the log-book, dated, and signed by him. The managers should also, at the end of the year, check the number of times the school has been opened, and also a sufficient number of the attendance totals (at least 10 per cent.) to convince themselves of the accuracy of the registration.

Admission Register.

7. The entry for each scholar should be made in this register ***on his admission*** to the school. Successive numbers must be allotted to the scholars on their admission, so that each may have his own number, which he should retain throughout his career in the school, and which should be used to identify him. This will be especially useful when there are two or more scholars of the same name. When more than one entry is made for the same scholar, that is to say, when he has been admitted and re-admitted, he should resume his old number, and cross references should be made to the entries.

8. No child's name should be removed from this register, so long as he is under legal obligation to attend school, unless it has been ascertained that he is dead, is attending another school, or has left the neighbourhood.

9. This register must show distinctly for each scholar who has actually been present in the school—

(*a*) His number on the register.

(*b*) The date of his admission (and re-admission)—day, month, and year.

(*c*) His name *in full*.

(*d*) The name and address of his parent or guardian.

(*e*) Whether exemption from religious instruction is claimed on his behalf.

(*f*) The exact date of his birth—day, month, and year.

(*g*) The last school he attended before entering this school. If this is his first school, the word "none" should be entered in this column.

(*h*) The highest standard and stage of specific subjects in which he was presented in his last school.

(*i*) The successive standards, and stages of specific subjects, in which he has been presented in *this* school.

(*j*) The date of his last attendance at *this* school and the cause of his leaving.

This register must have an alphabetical index.

Attendance Registers.

11. Separate registers should be provided for older scholars, for infants, and for half-timers in each school or department; and on no account should the attendance of any scholar be entered in a register of one of these sections when he is being taught with another section, or be transferred from one section to another. Separate registers should also be provided for recording the attendance of scholars at special classes for instruction in any of the subjects mentioned in Art. 12 (*f*). These registers should show accurately the time during which the scholar is under instruction at the class; and those for cookery classes should also state the number of hours spent by each scholar in cooking with her own hands.

12. The approved time-table must provide adequate time at each meeting of the school for marking the registers, and they must be marked and the attendance totals entered during the time so provided. This time must end before the commencement of the minimum time constituting an attendance as defined by Art. 12, after which no scholar may be marked present except as provided in par. 17.

13. The name of the school, department, and class should appear on the cover of each register.

14. There must be columns for the admission numbers and names of the scholars, both of which must invariably be entered at the same time, and a column for the attendances at each meeting in the school year, which column should be properly dated *before any entry of attendances or absences is made in it*. These attendance columns should be grouped in weeks, and at the foot of them should be spaces for totals of the number present when the registers were marked and the number withdrawn before the time constituting an attendance is complete (Art. 12 (*d*)). There is

no need that the weekly total of attendances of each scholar should be entered ; but it will be convenient to add up, and record the total of, the attendances of each quarter.

15. If school fees are entered in the register, they should be kept quite separate from the other entries ; the best place will be the extreme left of the page before the names of the scholars.

16. Every scholar whose name has been entered in the admission register and not removed from that register must be definitely marked \ (present) or O (absent) at every meeting of the school.

17. When a scholar leaves before the completion of the minimum time prescribed by Art. 12, his mark of presence must be cancelled by drawing a ring round it thus, \ and his attendance must be deducted from the total. But this need not be done in the case of a scholar leaving the school for instruction in any of the subjects mentioned in Art. 12 (*f*), unless it is subsequently ascertained that such scholar has not completed the minimum time constituting an attendance. Any scholar marked absent at any meeting who is found—when the registers of a central class for cookery, drawing, science, &c., or the registers of attendance at museums or art galleries, are examined—to have been present during the minimum time constituting an Attendance (Art. 12 (*a*) and (*b*)), at such class or partly at such class and partly at the school, may have the letter C, D, S, M, A, &c., entered inside the mark of absence, thus, C D S M A. All attendances so registered should be added to the total attendances of each child at some time not later than the end of the year.

18. At each meeting the total number of scholars marked present should be checked by counting those actually present before the correct total is entered at the foot of the register.

19. The number of scholars who have left any meeting before completing their attendances (*see* 17 above) must be entered *at the close of each meeting*.

20. When the school does not meet on an occasion for which space is provided in the registers, this space must before the next meeting be cancelled by one or more lines being plainly drawn throught it. The reason why the school did not meet should always appear in the log-book. For longer periods "holiday" should be written across the column.

21. Attendance registers should be preserved for ten years after they are filled.

22. The attendance registers must be marked every time the school meets, however small the attendance, and the meeting must be counted in ascertaining the average attendance.

23. *Half-Time Scholars.*

(*a*) A separate *half-time register* will be kept of all half-time scholars. The managers should not enter in this register the name of any scholar unless he has obtained a labour certificate from the local authority of the district, and is actually employed in conformity with such certificate.

(*b*) In this half-time register will be posted, at the close of each week, the number of the attendances made by each of the half-time scholars during the week.

(*c*) The class registers will be marked for half-time scholars just in the same way as for other scholars, presence *for not less than two hours of secular instruction* being marked by a stroke, and the entry for the week in the half-time register will be the number of such *two-hour attendances* made during the week. When the yearly total is ascertained, 50 per cent. may be added to it, to obtain the number of "attendances" as defined in Article 12 (*b*).

(*d*) In Form 9 it will be necessary, for statistical purposes, to have the total number of two-hour attendances, whether made by half-time or whole-time scholars, stated. The average attendance entered in Form 9 will be found by dividing this number by the number of meetings of the school. In the space following the entry of average attendance (number VII. (4)) will be entered, as at present, the additional attendances (50 per cent. of those made by the half-time scholars) claimed under Article 12 (*b*). The average attendance, which will be the basis of the grant, will be calculated from the above data by the Education Department.

(*e*) At the end of the year a list will be drawn up, signed by the officer of the local authority, and presented to the Inspector, certifying (*a*) the number of two-hour attendances made by each half-time scholar, (*b*) the addition claimed on his behalf under Article 12 (*b*). This addition may not exceed—

(i.) *One-half* of the two-hour attendances made by the scholar during the year; or

(ii.) Such a number as when added to the number of his two-hour attendances will give a total equal to *three-fourths* of the number of meetings of the school during the year.*

* *E.g.*—Suppose a school to have met 420 times—

A half-timer if quite regular throughout the year, will be present at 210 meetings; and this allows in this case an addition of 105 to his two-hour attendances.

Register of Summaries.

24. In day schools, the attendance totals of each class and department, for each week or part of a week, the number of times each department has been open for the same periods, and the average attendance of each department for these periods should be entered in the Register of Summaries *at the close of each week.*

25. At the end of the school year the total number of attendances and meetings for that year should be ascertained for each school or department.

26. The average attendance for the year should also be ascertained for each section of the school for which separate returns are required by dividing the total number of attendances in the year by the number of meetings of the school in that year.

27. The summary should also show the number of scholars on the registers at the end of the school year classified as required by Form 9.

28. Registers of Summaries should be permanently preserved.

Log-Book.

29. "The log-book must be stoutly bound and contain not less than 300 ruled pages. It must be kept by the principal teacher, who is required to enter in it, from time to time, such events as the introduction of new books, apparatus, and courses of instruction, any plan of lessons approved by the inspector, the visits of managers, absence, illness, or failure of duty on the part of any of the school staff, or any special circumstances affecting the school, that may, for the sake of future reference or for any other reason, deserve to be recorded. No reflections or opinions of a general character are to be entered in the log-book." (Art. 8.)

30. Entries in the log-book should be made at the end of each school week, and at such other times as occasion may require.

31. The log-book should contain an explanation of the reason for the closing of the school on all occasions on which it is closed.

32. It should also contain an account of all important variations in the attendance, and all deviations from the ordinary routine of the school.

33. Log-books should be kept as a permanent record.

If from any cause, such as illness or residence in the district for less than a year, his attendances fall short of 210, he may still be counted as a half-timer for the number of times he does attend. In such a case, if he attend, say, 180 times, he may have an addition of 90 to his two-hour attendances.

If, on the other hand, he has been out of work for any time, and, therefore, at school, he may have made more than 210 two-hour attendances. In respect of such extra attendances he has no claim to be treated as a half-timer. If he has attended (say) 260 times, he may be allowed an addition of 55 to make up *i.e.*, 315, three-fourths of 420.

Accounts.

34. Among the conditions required to be fulfilled by a school in order to obtain an annual parliamentary grant (Art. 76), the Department must be satisfied that accounts of income and expenditure are accurately kept by the managers and duly audited (Art. 85 (*d*)), and the income of the school must be applied only for the purpose of public elementary schools (Art. 90).

35. In all schools a cash book should be kept, in which an accurate and fairly detailed statement is made of the school accounts.

Work Books.

Work books are now necessary in all schools under Government Inspection, but for some time past these have been more or less in use. The work should be divided so that the complete year's course is well covered for all subjects in the first ten months of the school year, leaving the remaining time for final revision and careful testing. Practically it will be found useful also to allow certain periods at other times for a general revision of the work done in the preceding two or three months. Careful consideration must be given to all the subjects before the work is finally mapped out, and the following points must not be lost sight of:—Arithmetic, Problems, and Mental Exercises ought to be continuously worked through the school year and not deferred until the last quarter. Never delay working problems until the mechanical rules are learnt. This is a fatal mistake. Reading.—While steady progress is aimed at, "unseen" reading should be attempted all the year round in the standards above the third. Writing.—The direct teaching of this subject should be continuous. Do not allow it to degenerate into a scribble at any period of the year, whilst attention is confined to spelling or to the elements of composition. In such subjects as geography, where considerable demand is made upon the memory, repeated revision is called for, and it is a good plan to commence the course again when a considerable portion has been completed. Alternate lessons may then be taken in new work, and in the revision of that previously dealt with. Though this revision is advised, it should be understood that it is desirable to so arrange matters that whatever is proposed may be completely mastered for the time; links are then formed, and little difficulty will be found when going over the ground again. For example, in the obligatory recitation, much weariness follows the practice of completing the lines early in the school year, leaving to the latter part the drudgery of constantly repeating the well-known couplets over and over again. It is much better to arrange matters so that the end is not reached too soon. First take a general view of the whole, and especially draw the attention of the children to other poems by the same author, then deal thoroughly well with each portion in its allotted period.

The summaries of oral lessons to be entered in such books will be practically teaching notes and an occasional lesson of special difficulty may well be worked out in full. Many lessons in English are fitted for this careful treatment. The record book should be mainly a proof of the regular testing of the work during the allotted periods set out in the work book. Tact and much thoughtful consideration will be necessary on the part of head teachers in filling in the required reports. Justice to the class teacher should be aimed at, but while allowance is made for difficulties, it is weakness to gloss over any failures due to neglect or carelessness on his part.

Progress or mark books may be more or less elaborate at will; they may show weekly marks or those given at the periodic tests. For practical purposes it will usually be found sufficient to allot marks for arithmetic, writing, and drawing frequently; for reading and class subjects, less often, owing to the time occupied in anything like a systematic examination of such subjects. If carefully kept, such books form the best basis upon which to promote scholars and to award prizes.

The various books referred to in the preceding paragraphs may be prepared by the teachers themselves, or advantage may be taken of those published with special ruling and other arrangements. Many of the latter include all the records in one binding, indeed one of Messrs. Jarrolds' includes even the class register as well. Some err perhaps on the side of over elaboration. The fact should never be lost sight of that the first and last duty of a teacher is to teach, and to this end mere book-keeping must be subordinated. Still the plan of plotting out work is not absolutely new, and in the absence of a formal examination day, the keeping of records is a necessary guarantee that work has been done, tested, and revised in a satisfactory manner.

CLASSIFICATION.

Individual Teaching, pure and simple, is rarely met with now, although it was the rule in older schools.

In these establishments, the master was stationed at his desk, and from it, or at it, managed the school. Pupils were called up one by one to say the lessons they had learned by heart, to show their writing or arithmetic, and to be, perhaps, questioned and taught. Even when classes were called up, pupils were taken in turn, and dealt with in the fashion described; of class-teaching as we now understand it, there was none.

This system was not without its advantages. Boys had to work for themselves: self-reliance was encouraged; individuality told; every pupil's case could be exactly met. But it involved loss of time, and waste of the teacher's power; discipline was generally harsh, for, if not, idleness and disorder were often rampant; there was no emulation; many required attention which the master could not give.

Object and Advantages of Classification. "The genius of modern Education" leads teachers to gather children who can be profitably taught together, into suitable groups for instruction.

Classification *economizes teaching power*, *saves time*, *makes control easier*, and enables the teacher to *provide work for all* with less difficulty.

Many children are dealt with as one. As children are placed in a class because of their approximate common attainment and ability, the need of one is largely the need of all, the teaching and help suited to one is suited to many, the mistakes one makes are likely to be made by his classmates, so that *correcting one sets many right*, and *teaching an individual teaches all his fellows.*

Children, of themselves, *help one another, directly and indirectly.* Whilst all have a stock in common, everyone has something of his own, which can be made useful on occasion to all his fellows. Coming from their classmate, it is likely to appeal more closely to the other children, and the possessor of any extra store is gratified at the temporary distinction he earns, when he is able to bring it forth; this stimulates him. *Emulation*,

Desire for Approbation, and various aspects of Sympathy, offer themselves for the teacher's use.

Good Classification *is known primarily by its placing every child where he may receive the greatest benefit* from all the lessons he takes.

Every child has a *right* to be so placed.

A "**Class**" is a number of children capable of being profitably dealt with together and grouped for instruction.

"*Drafts*" are parts of classes drawn off to receive special treatment. "*Sections*" are made by grouping two or three classes.

The broad **Principle of Classification** is *Similarity*.

Any point of resemblance might be adopted as a basis of classification.

We *might* classify children by their age, or by their height, or by the length of time they have been at school, or by their attainment, &c.

The basis of classification may also be *complex*.

For example, height and colour, or age and ability might be taken in conjunction.

But the *object* to be served by the classification should determine the basis. School classification is intended to promote intellectual activity, and to favour acquirement. *The only sound basis of classification for school work is* **attainment**, or ability as shown by acquirement.

It is only when children are of nearly the same intellectual standing, that class-work can be truly efficient, that emulation can have proper scope; that instruction can be neither too difficult for some, nor too easy for others, but adapted to all.

Age as an element in Classification. *Progress will be broadly commensurate with age* in average children, *i.e.*, in the great majority of children.

Attainment would be proportionate to the time they had been at school, other things being equal, and this, in effect, is in proportion to their age. Hence there is a reasonableness in expecting that average children of the same age will reach the same standard of attainment. This can be expected of the mass, provided all have been subjected to the same training, under like conditions, and for the same time.

But *natural power varies.* Some children are precocious, others slow; memory is retentive in one case, treacherous in another. Consequently children who have been subjected to the same influences for the same time are *not alike* at the end. On this account the age test is unsound.

Natural *power*, the *time* given to education, and the *mode of treatment* must be identical in all cases, if age is to be a fair basis of classification. But in none of the three can we obtain absolute identity; hence the impossibility of turning out children all alike becomes yet more apparent. When children are compelled to be regular and punctual, there will be a closer approximation to identity.

Systems of Classification. To do the best that is possible for every child, *he should be placed in that class in every subject for which he is best fitted.*

This is at least true in theory. But it is capable of different interpretations.

(*a*) **Multiple or Manifold System.** The principle here is to put every child into that particular class in every subject for which his capabilities and attainments in the subject fit him.

If he can read well enough for the highest class, let him go to that class for Reading; but if he be behind in Arithmetic, and only able to do fourth class work at that subject, let him go to the fourth class for Arithmetic. The same principle can be applied in all the school subjects.

To work a school on this plan, scholars must be classified at one part of the day solely by their ability to read, or the school is arranged in Reading-classes, and every pupil placed in that particular reading-class for which he is best fitted. At another time the school will be classified according to skill in Arithmetic; this Classification will be quite independent of the other; members of the fourth class in Reading will be scattered, some remaining in the fourth for Arithmetic, others going to the fifth, others to the third, or elsewhere. The same plan is followed with other subjects. A scholar may therefore be placed in several different classes at one school-meeting.

Observe, that *all would work at the same subject at the same time;* the school would be an Arithmetic school at one period, then a Reading school, and so on.

Loss of time, the necessity for many classes, the inevitable noise, the difficulty of providing sufficient teachers, the numerous changes, and the

requirements of order and general discipline, hardly ever allowed the Multiple system to be *fully* carried out. Modifications as under (*c*), were almost invariable. Any theoretical excellence in the arrangement was overborne by the easier workableness of a less complicated system.

The plan is rarely attempted now. Most of the advantages connected with it are obtainable by subdividing and re-arranging sections during various lessons, whilst the section yet remains under the same teacher; *i.e.*, there is no transference of children from one section to another to receive different lessons.

(*b*) **Single System.** The more general practice now is to classify children according to their *average ability* in all, or in the more important class subjects.

It is easier to work a school on this plan, and though some of the class would be benefited if they were placed differently during certain lessons, yet the great *bulk* of the class *is uniformly improved* by the arrangement.

Bible lessons, Writing, Geography, History, Grammar, and Collective lessons, can be so adapted as to suit a class whose members are unequal in attainment. To a less degree every member of the section may profit from Reading and Dictation, and even from Arithmetic lessons. But in Arithmetic especially, the weakness of the "Single Classification" reveals itself; quick children lose time, and the advantages arising from competition and emulation; average children maintain their average place; slow children are likely to be neglected, unless some stimulus be provided for the ordinary teacher in their case.

To do the best that is possible for every child, the Single System must be modified a little. Sections and classes must be broken up at times; *there must be a sub-classification within the section*, for Reading and Arithmetic at least. Other subjects *may* not require a break in the section, but the teacher must know who are strong, and who weak, and act accordingly. Monitors can help sometimes; more often the teacher must manage his several classes alone; indeed the sub-classification may be the teacher's secret, existing in his mind only, and not apparent to others.

(*c*) The *Single* and *Multiple* Systems may be regarded as *extreme* forms of *Classification*. **Intermediate Systems** have frequently been used, not only informally, as recommended under (*b*), but as fundamental plans for arranging the children throughout the day.

A *Dual or Twofold Classification* was common. The school would be

classified at one time for Reading, at another for Arithmetic. Other subjects were tacked on to the classes thus arranged, where they fitted best; *e.g.*, Oral Spelling and Dictation would go most naturally with Reading, Mental Arithmetic with Written Arithmetic, whilst Geography, &c., *might* go with that which was most convenient.

A *Threefold Classification* of scholars (*not to be confounded with the "Tripartite System" of general Organization*) was sometimes met with. In it Reading, Arithmetic, and Writing (a mechanical subject) were the bases, and allied subjects were joined to them.

Miscellaneous Hints. *Have as many classes as can be effectively supervised*, but not more.

If classes be too few they must include children of unequal attainment; if too many they cannot be attended to with sufficient detail by the master.

Note that Bell advocated large classes to economize teaching power and favour ready supervision; Lancaster used small drafts that individual scholars might get plenty of practice, although in doing this, his corps of monitors must include some weak members, and the greater number of classes made it harder work for the master to look to them all. The opposite difficulties, between which the teacher has to steer, are well shown in the organizations adopted by these two men.

The size of sections and classes is influenced by the same considerations.

Small classes favour *concentration* of power on individuals, large classes favour *economy* of power. *The number and quality of the teaching staff* will practically settle the matter, and, in most cases, the Departmental regulations fix this point.

Note again that the *character of the subject* in hand has an important bearing on the proper size of classes at the time. A *lesson* on Reading can be given to a large section; individual *practice* comes best in small classes. The same rule holds partly for Arithmetic. Other lessons can be well given by a good teacher to a fairly large section.

Work in the direction of small classes.

Gradate or graduate *classes* carefully.

This rule should apply not only to Departmental class-requirements, but to subordinate classes within a section or class. *Inequalities in sections* must (or should) be thus dealt with.

Each class should be employed at *consciously higher* work than that below it, yet there should be *no great break*—nothing insuperable or discouragingly difficult to boys newly promoted.

A well-considered class scheme is essential.

A *scheme of work for every class* ought to be drawn out; there should be *a distinct requirement from every class*, and this should be put into writing. Such a scheme is second only to the Time-table in importance.

Work is thus *graduated*, *systematized*, and made *definite*, instead of being haphazard and immethodical. If, for example, the Reading lessons for a quarter, a month, or a week, be arranged beforehand, teachers know what to prepare, and the reading-book is put to good use. Further the written scheme serves as a record of what has been done. What is true for Reading holds also for other subjects.

But *the head-teacher must make the plan work*. The writer knows schools where general class-schemes serve their true purpose; he also remembers a conspicuous case, where the form was filled up, and there the matter practically ended, save for the mischief which arose from issuing a regulation in form without giving it any real force or truth.

Some arrangement of this kind is necessary if the head of a large school is to know what is going on at any and every time, as he should do. If he does not fill the form himself, he should see it and sanction it, before it comes into use.

Teachers in State-aided schools should be *guided* in their class-work *by the Departmental Standards*, but they need not, and *should not limit themselves by them*.

In fact *the teacher's own class-standard ought to be higher than that fixed by the Department*. (The writer is aware of the exceptional difficulties which beset some teachers. Even they, however, should look in this direction.)

Keep children reasonably on the stretch; alternate this with repetition, and periods of review. Earnest teachers should be cautioned against going too far or too fast, whilst they endeavour constantly to raise their standard. Departmental programmes may sometimes be felt as a clog by the more nimble teachers, but they are valuable checks on undue haste, and securities for thoroughness. At the same time they show the *minimum* requirement; see to it that this minimum at least is fully reached, then do as much more as can be done well.

Each class has not only a specialized work for itself; it is also a preparatory stage for the class next above, and part of its work should have reference to the second function.

Good classification and a good class-scheme will meet both requirements; a fourth class is being prepared for the fifth, whilst doing fourth-class work.

In small schools, where two or three classes have to be combined to receive lessons in Grammar, &c., the rule now under consideration must be modified. Sometimes lessons should be consciously fitted most for lower children; this serves for recapitulation to the rest. At other times lessons have to be prepared for the advanced children, and yet, if possible, so managed as to give ideas to the others; crumbs for all must be freely offered in every lesson. The important point is —*Shall we in combined classes work most with reference to advanced children, or for those below the average?* In practice, we must think of the extremes, provide something for all, use the instruction for the advanced to give preliminary notions to the rest, and the instruction for the lower scholars as recapitulatory exercises for the higher.

Classifying new scholars.

New scholars are commonly of three classes:—(1) those who have just left other schools and are fairly well up in their work; (2) those who left their last school some time ago and have forgotten a great deal; (3) those who have not been to school before.

In every case, cause them to produce such certificates as are available. It is well also to obtain information direct from parents and other teachers. Many employ printed forms for this purpose.

Having obtained all the needful information, it remains to *see that the spirit and the letter of Departmental regulations are carried out.* Children coming under (1) above, cause no difficulty; those under (2) should be classified according to ability, it being understood that a boy who has gone through the work is likely soon to recover lost ground, and that he may consequently be put a little higher than he otherwise would be.

New scholars under (3) had best be classified by Reading and Arithmetic taken together, the classification being modified in doubtful cases by attainment in other subjects. *Age* should be noticed; if young, put the new pupil as low as you can, if old, as high as you can, consistently with the fundamental principle of doing the best that is possible for him. Something is due to the self-respect of children; older children therefore, even if dull, should be placed as high as possible.

Promotion from class to class.

A boy should *not* be promoted *until he is fit nor kept back after he is fit* for promotion. Else the lad is unfairly dealt with; in one case by being set to advanced work before he is thoroughly ready; in the other *his best* is not demanded, emulation is hardly available, the boy forms false ideas about himself and his work and he is likely to be disheartened by the feeling of unfairness.

Place and keep children on competing terms. Making subordinate classes within sections may be sufficient to keep up emulation, when children are *not* sufficiently advanced to be moved to the next section.

Examinations for promotion should be reasonably frequent; do not grudge the time and trouble required in this matter.

Beside the individual promotions there will be promotions of classes or divisions *en masse*, from one grade to another in the same class, or from one class to the next. This is a consequence of the "Single System." If class-teaching has been sound the bulk of the scholars will have progressed evenly, and will be ready for removal together. Such wholesale change may take place about twice a year, one being soon after the close of the school year. Unfairness could be checked by individual examination, subordinate classification, and perhaps holding some weaker children back for a time.

Having recognized places in higher classes acts like a form of subordinate classification, as well as help to Order, and stimulus to general application.

The principle can be variously applied. Places may be allotted according to—

(1) *Average Attainment*, determined by periodically searching examinations. This exercises a fine influence.

(2) According to *Reading or Arithmetic;* making a dual classification within a section.

(3) According to *weekly examinations* in different subjects; places would only be taken for a minute or two in this case, during the actual process of examination. For example, a teacher may examine the writing, and place the boys around the room in order of merit; next week they may take the same order before he begins to examine; any change of place then becomes a stimulus.

TIME-TABLES.

Object and Use. A well-constructed Time-table is an exact and complete statement of the school routine.

It shows *what is being done* by every class, at all times, throughout the day or week. It *methodizes* school-work, utilizes every moment, *provides useful work* for everybody, *distributes time properly* to different subjects, so that no one is neglected or taught out of due proportion. It has a *good moral influence*, for teachers and children are helped to be punctual, methodical, orderly, and industrious, by the Time-table specifying their duties, and strictly binding them to work and to time. It also *relieves the teacher* from anxiety, and from the necessity for interference.

The difficulty in drawing up a Time-table is greater than many would imagine. To make a scheme which shall look well on paper is comparatively easy, but constructing a Time-table which shall conform to the principles shortly to be mentioned, which shall utilize all the forces at the teacher's disposal, which shall provide for the conditions of the school, and which will *work* smoothly, always demands thought, and usually necessitates several experiments and changes before it is completed.

The difficulty is greatest *when several classes or standards have to be kept at work by a teacher who is unassisted.* Employing monitors, and grouping classes must be amongst its chief resources, and his time-table must be so arranged as to allow him to group classes for collective lessons, and to supervise easily. In small schools, a great deal may be done by having lessons on the same subject going on simultaneously in as many classes as can be supervised effectively. Arithmetic, for example, with some form of Writing, would keep four divisions employed. This plan, however, has obvious limitations. Two or more lessons, each requiring the teacher's direct care, such as Grammar in an upper class, and Geography in another, may not go on together.

The want of a class-room makes it *hard to provide for isolation*, especially during noisy simultaneous lessons.

Teachers find it *difficult to properly attend to or supervise junior pupils, because of the number of subjects* taken in higher classes, or perhaps by the juniors themselves.

Apportioning time amongst subjects in due amount; giving most time to those which need it most, whilst yet attempting to satisfy departmental requirements, is difficult in many schools. Finding sufficient time and opportunity for looking after *Home-lessons* is a special trouble.

Apportioning the school-staff to the best advantage is one of the difficulties incident to larger schools.

Faults in Time-tables. These are violations of the principles to be mentioned in the next section, or want of conformity to them. A list could be drawn up by going through the principles mentioned, and setting down noticeable transgressions and shortcomings.

Shortcoming exists wherever, and so far as, all are not kept employed in the best way, throughout the school-day.

Mal-apportioning of time occurs when lessons are too long or too short; when important subjects receive too little time, or less important more than their share; or when the times for beginning and closing school do not agree with the requirements of the neighbourhood. Cases have occurred in which some subjects have not appeared on the Time-table at all.

Bad sequence of subjects, as when easy subjects come early, and difficult ones late in the school meeting; or when two difficult lessons follow in immediate succession, instead of alternating difficult and easy; or when lessons requiring the exercise of similar faculties follow one another.

Bad arrangement of scholars. Sometimes there are too many classes to be properly attended to; at others classes are so grouped that the extreme members can scarcely be taught together.

Injudicious placing of teachers, especially the head-teacher, with regard to scholars and to subjects (*e.g.*, monitors trying to take difficult lessons, whilst the teacher takes an easier subject). Head teachers frequently confine themselves too much to one or two classes; lower classes often get far too little of the head-teacher's care. Sometimes teachers have specialities which could be more fully used.

Insufficient attention to physical conditions; too much sitting or standing, being kept too long on the gallery, &c.

Complexity, instead of Simplicity, in arrangement.

Incompleteness; e.g., class teachers not specified; analysis of Time-table not appended, &c.

Departmental regulations inadequately met, as in time for marking registers, making a complete attendance, times for closing school, necessary time for recreation.

The Time-table should comply with Legislative enactments and Departmental regulations.

(*a*) For example, *Religious Instruction*, if given at all, must be given at times specified in the Time-table, and either at the beginning, or end, or beginning and end, of a school meeting. The Time-table, showing the times for religious observance or instruction, must also be "kept permanently and conspicuously affixed in every school-room." (*Elementary Education Act*, 1870.)

(*b*) The time for marking and closing registers must be clearly shown; care being taken that this allows of an attendance being secured in accordance with the requirements of the Education Department. Two consecutive hours of attendance at secular instruction are required by the Education Department, in order that an Attendance may be marked. This minimum time may include an interval for recreation of not more than fifteen minutes in a meeting of three hours, and not more than ten minutes in a shorter meeting. A meeting of two hours or more must include an interval for recreation of not less than ten minutes.

(*c*) Drawing must be included among the subjects taught to boys, and at least one hour and a half must be devoted to instruction in this subject per week.

(*d*) The Time-table should also show what special lessons are given by the pupil teachers under the express supervision of the head-master, in order that they may be efficiently instructed in the art of teaching.

(*e*) The Time-table must be approved by H.M. Inspector, and is usually signed by him to this effect.

(*f*) Any deviation from the Time-table should be recorded in the official log-book of the school.

Leading Principles in drawing up a Time-table.

Time should be distributed amongst the subjects in the order of their relative importance.

Two broad considerations come in prominently here. First, *the relative importance of the ordinary secular subjects in themselves.* Reading, Writing, Arithmetic, Spelling, form the most important group; then follow Grammar, Geography, and History; whilst a third group includes lessons of general information, and extras of different kinds. Next is *the*

relative importance of subjects at different stages of progress. For example, a junior class will require much practice in Reading, but very little in Grammar; so an advanced class needs much more time for Arithmetic than for Reading.

Lessons should be of proper length; the length of a lesson should be inversely proportional to the demand it makes.

Continued application is desirable; the teacher should see that it can be given. Lessons should be *long enough to yield their greatest good, but not* long enough to become *tedious.* Mental arithmetic should be short, because it is exacting; written Arithmetic may occupy forty-five minutes or an hour in the highest classes.

As a rule, *forty-five minutes* is a convenient length for most lessons in upper classes, especially in large schools, and *thirty minutes* for junior classes; many teachers prefer half-hour lessons throughout.

The requirements in Needlework can be fulfilled in three, or at most four hours per week. (*Instructions to H.M. Inspectors.*)

No lesson to infants should last longer than thirty minutes. In practice, this time would be shortened by singing, and imitative or other exercises between the lessons.

Lessons should be *judiciously arranged*, and should follow in *proper sequence. Changes should be provided for at suitable intervals.*

Exacting lessons, requiring much concentration and mental effort, such as Arithmetic and Grammar, *come best whilst children are fresh, i.e.*, soon after school begins. *Mechanical work*, such as Writing, and even Reading, *can* almost *be used as a relaxation. Writing or Drawing ought not to be taken immediately after school opens*, for children's hands are then unsteady, and often hot, or wet with perspiration.

Entire *change in the character of the work* should be provided at proper times. Lessons making their chief demand on the same or on cognate faculties should be separated. Writing and Drawing, Copy-book Writing, and Dictation, and even History and Geography, should not come together; they may come during the same meeting, but variety should then be secured by inserting some altogether different subject. If easy "mechanical" work be made to alternate with difficult the strain is relieved.

Change of posture is desirable; two-thirds of the time for sitting, one-third for standing, is a good arrangement.

With this we have to note that *changes should not be frequent*, or they have a disturbing rather than an exhilarating effect.

Restraint and freedom, work and play, should alternate at proper intervals. Young children are better for a *recess* during an ordinary meeting.

Intellectual energies recruit themselves during healthy play, and play itself becomes more enjoyable as a rebound from restraint. Cessation from mental effort lays up a new store of freshness on which subsequent demands may be made.

The head-teacher's time should be wisely distributed both for teaching and superintendence.

As a general principle he should *try to give as much of his own teaching as he can to every scholar.*

Opinion varies as to the best place for the teacher in ordinary-sized schools; most would say he should *spend the bulk of his time in the upper classes*, but should *give* at least *one lesson every day to every class.*

When monitors are used *the teacher should take the difficult work*, and leave what is more mechanical to the monitors. It would be a bad arrangement which set the teacher to give out Dictation whilst monitors heard the Reading or tried to teach Grammar even in a lower class.

Where the teaching staff is weak, *two subjects, each of which requires the teacher's direct care, should not go on simultaneously.* Grammar and Writing, Arithmetic and Dictation, Geography and Transcription, would be better than Grammar and Geography, or even than Grammar and Arithmetic. Where children have text-books the difficulty here alluded to can often be met, partially at least; much may be done also by grouping classes, and setting them to different forms of the same work, especially in Arithmetic.

Adjoining classes should not annoy one another.

Noisy lessons, such as Simultaneous Reading, are best in a class-room. In some schools class-rooms are not available, and the teacher has to consider the best times for such lessons, and the best places for the classes engaged in them. Annoyance may be lessened by moderating loud tones, by placing the noisy class at the end of the room, and by employing the other classes in the room at Writing or Drawing.

The Time-table should be adapted to the circumstances of the school.

Young teachers often possess themselves of Time-tables which have been worked successfully in other places, and then transplant them bodily into their own schools; this is usually a mistake. The size and aims of the school, its connection with the state or with any governing body, the obligations thus imposed, the average age of the scholars, the number suited for different classes, the duration of school-life, the character and pursuits of the locality, the form and fittings of the room, the teaching

staff, whether the school is mixed, full-time, or half-time,—these and other points will influence the construction and determine the value of a Time-table. So far, however, as the circumstances of schools are alike, the same Time-table is admissible in both, and this condition of things is becoming pretty general.

Simplicity of construction should be aimed at.

Needlessly complicated Time-tables are often met with, especially where the teacher is unassisted, in his anxiety to reach every class. Another complexity arises where the teacher tries to teach more subjects than he can attend to properly.

If the same subjects be taken at the same times day by day, the Time-table is made simple. Cognate subjects may often be put in corresponding places; *e.g.*, Geography may alternate with History, or Grammar with Elementary Science, on different days.

A well-drawn Time-table is usually more or less symmetrical, and can always be understood at once by one versed in school work.

The Time-table should be complete.

It should show *what* is being done by every class at every part of the day, and what *teacher* is in charge of each class. It may also tell *where* every lesson is given. *No alternative subjects*, such as "Geography or Grammar," should appear; specify exactly what is to be done, and the time for doing it; fill up the Time-table for every part of every school-day.

An Analysis of the Time-table should be appended showing the aggregate time each class gives to every subject during the week. Such an Analysis "is to the Time-table what an index is to a book."

Constructing a Time-table. The art of making a Time-table lies in satisfying the conditions, or conforming to the requirements and principles just mentioned.

For a *single class* this is not difficult to an experienced man. But for a *large school* there is much room for ingenuity in providing the right work for every class, and putting every teacher in the best place. Even teachers of experience usually have to alter their Time-tables more or less after they have been tried.

Altogether, *the Time-table is a gauge of a teacher's theoretical knowledge of Organization, and, largely, of his practical acquaintance with the actual working of a school*; hence the prominence given to questions upon it in teachers' examinations.

When actually making a Time-table.

Note what *time* is available for school-work during the week after allowing for recess, roll-call, &c.; also note the *subjects* which have to be taught. Think about the *staff of teachers*, and of the *plan of the room*.

Distribute the time broadly amongst the subjects (*x* hours a week, for example, to Reading in the third class) in the order of their importance, for every class. Think which of these subjects, and how many lessons *the teacher* ought to take, which can or should be taken by *assistants*, and which by *pupil-teachers*. Supposing that you know the pupil-teachers and assistants settle where each can be placed to the greatest advantage.

Now comes the great difficulty. *Deal first with the main subjects*, Reading, Writing, Arithmetic, Drawing, Needlework; distribute them as judiciously as you can over the week, giving each its proper share of time in each class, and putting it at the time of day best suited for it. *Next*, take up the Class Subjects*—Singing and Recitation; and *lastly*, such other subjects as it is expedient to introduce. Fit each in as nearly as you can in a suitable place, and give each its proper time, bearing in mind any special circumstances you can work upon without bewilderment. Now *put a suitable teacher for each subject*, trying, if you can, to keep the same teacher to the same class for all subjects. In this way you obtain an *approximation* to a good school Time-table.

It remains to *examine and test* it by practice, and to alter and *amend* it until it works smoothly and effectively. *Try it also by* the tests or *principles* before enumerated. Some, perhaps several, alterations will be needed, for one change usually involves others. Probably *a degree of theoretical perfection has to be sacrificed* to circumstances; each of two alternatives is seen to have advantages and disadvantages, and the relative advantages of each have to be weighed.

Miscellaneous Hints. *See that the Time-table is known by* all concerned.

Let no one be in doubt respecting what he has to do; let there be "a well-defined next" in time, as in teaching.

Have the Time-table strictly adhered to by all.

However interesting or useful a lesson may be stop at the appointed time, as you begin to the moment.

Avoid altering the Time-table after it has once come into operation.

* **English, Geography, Elementary Science, History, Object Lessons, Suitable Occupations, Domestic Economy (Girls).**

The necessity for alteration argues *insufficient skill, or insufficient thought* in him who drew up the Time-table. Alterations *disturb* the school also.

Young teachers newly appointed to schools *are advised ... o be in a hurry to alter the Time-table they find in use.* The late teacher had a reason for his arrangements, and the new teacher will be wise not to upset them until he has acquainted himself with the circumstances, and unless he has a better reason for changing than for leaving things as they are.

In *mixed schools* boys can be instructed in Drawing, whilst girls learn needlework. If this plan be not adopted, let the boys repeat one or more subjects which they take in class with the girls at other times.

Subjects peculiarly suited to boys (Drill, Gymnastics, Arithmetic, Mensuration, and Algebra)—or subjects which girls pick up more quickly than boys (Reading and Spelling perhaps),—or, in default of these, any other school subject—may be taken. See that the girls do not absolutely miss any required subject through attending to Needlework.

Manual Instruction for boys, and Cookery and Laundry Work for Girls, may be taken at corresponding times.

In *half time schools* plans vary with differing circumstances.

Where some scholars come in the morning during one week, but in the afternoon during another, a Time table drawn up on the ordinary plan for a week would work.

Candidates for certificates and teachers in State-aided schools generally should *familiarize themselves with Departmental regulations and instructions* about Time-tables.

Among the chief points which the English Education Department requires, the following may be noted. Every school must have a Time-table, and a copy must be provided for every school-room, and be kept permanently and conspicuously affixed there. Inspectors may point out serious objections to any Time-table, but teachers and managers must take the responsibility for details. The inspector may approve and sign a Time table which provides at least the prescribed period of continuous secular instruction under the head-teacher's supervision. Religious instruction must be given at the beginning of a school-meeting, or at the end, or both; but not necessarily to all classes at the same time, if there be a class-room. Scholars withdrawn from religious instruction, &c.,

must be provided with secular instruction during the time set apart for religious observances, if the school-rooms allow of it. (A copy of the Regulations under sect. 7, Education Act, 1870, must be exhibited conspicuously in the school.) After the inspector has signed the Time-table, it should be adhered to; this, however, is not obligatory. Teachers should enter in the log-book any permanent or temporary change in the Time-table. No change in the times for religious instruction may be made without the express sanction of the inspector. Inspectors will note in the log-book every case in which the recognized Time-table is not being followed, unless an explanatory entry has been made. An analysis of the Time-table should be made shewing the number of hours devoted to each subject.

Making up Time-tables in the examination room.

In preparing for this important exercise it will be well to study and *master the leading principles* to which good Time-tables conform. Then *examine a few good Time-tables* and familiarize yourself with them; the Time-table of the school you are best acquainted with ought to be of great use. After this, *accustom yourself to write out Time tables* for schools of different sizes. Those not acquainted with the matter would be surprised to find how much time is often consumed in an examination through unreadiness in this particular, the unreadiness resulting from want of practice.

THE TEACHING STAFF.

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1. **The Head-Teacher** is theoretically responsible for everything connected with the school.

All the minutiæ affecting every scholar, every teacher, and every detail are supposed to be under his purview.

As a fact, he ought to *make general arrangements* for the conduct of all school duty, and the guidance of all subordinate teachers and scholars; he should also *see that these arrangements are carried out* by all concerned, as far as his opportunities go. But beyond this, he cannot fairly be held responsible; he cannot do everything and see everything directly and of himself; *he must act through subordinates.* There are, however, great differences in the power different men show of making themselves *felt.*

It is difficult, if not impossible, to specify the various duties of a head-teacher. The leading points come under the following heads.

(*a*) **Organizer.** The business of constructing the school-machine, of putting it in going order, and of keeping it at steady work, devolves on him.

It falls to him to *classify* the children, to select and arrange the *subjects* (in part), to allot *places* to different classes, and to draw up *class-schemes and time-tables* for various classes and for the whole school. He sanctions the arrangements for *breaking sections into classes*, where he does not make them himself, and sees that *junior teachers* are provided. He places *teachers* where they will do best service, sees that needful *appliances* are available, and takes general care of *cleanliness*, *order*, *attention*, and *other essentials.*

To be a good organizer and manager, qualifications distinct from those required in a disciplinarian or teacher are needed.

There is doubtless a *natural aptitude* in this department, as in all others, which stands one in good stead.

A master must know what schools are, what their work is, and what are the minute duties of every one connected with them. That *intimate knowledge which comes of sufficient experience* is alone to be relied on; books cannot let any one into the secret.

Added to this, there must be some *insight into character*, a power of judging what each is best fitted for, and what he can do best. *Power to manage* and deal with not only boys and pupil teachers, but adult assistants also, is a further requisite, so as to evoke and keep up a good spirit and loyal co-operation. *Sympathetic good feeling*, coupled with *tact*, is essential, if the head-teacher is to maintain his position as controller and master, whilst yet he is regarded as a friend.

Further, and especially, there must be a *capacity for detecting weak places*, and parts which work badly, *joined to inventiveness and constructive power*, and a *readiness in devising remedies* for shortcomings and evils.

The other moral and intellectual aptitudes and qualifications which go to make a teacher and disciplinarian, have an important though indirect bearing on one's power as an organizer.

(*b*) **Overseer and Disciplinarian.** Having devised the best employment he can for all, he has further to *supervise and manage*, to *maintain and regulate*, to *watch and interfere*, as need arises. He has to loosen or tighten the screws of the machine, and to oil it on occasion, as well as to drive it.

Superintendence ought to be *felt;* instead of being a superficial formality, it should be a constant, forceful, living power.

Effective oversight reaches *details*. Amongst these, the following occupy a leading place :—

Having the *time-table* adhered to, and observing how it works; trying to discover any places in which it can be improved or modified, so as to do more or better for everybody.

Noticing whether *every teacher* appears to be in the best place for him, or whether he would be likely to do better work, and to be happier elsewhere. Being on the watch to *reinforce each teacher's influence*, and to *obviate any evil* which may arise inadvertently or from other cause. Seeing that young teachers do *not abuse their authority*, especially in the matter of punishment. *Watching the teaching*, and noting weaknesses in method; dealing with these sometimes at once, sometimes by pattern-teaching, but more often by speaking after school and privately. With pupil-teachers, individual faults can be made into good texts on which to found general warning and advice.

Looking to the *general conditions which favour good work*, and make school happy, such as ventilation, temperature, cleanliness, and tidiness, in the school, the playground, and the children themselves.

Scrutinizing the *registers*, and helping the class-teachers to secure regular and punctual attendance.

Examining copy-books, dictation-books, and home-lesson books, sometimes with the class-teacher, sometimes independently. and keeping a memorandum book in which good points and defects of individuals and of the class as a whole are entered. Giving definite suggestions and criticisms in this way, and noting them for future suggestion and help, works well.

Examining classes regularly, and seeing that the work fixed by the class-scheme is being done. This secures a measure of regular and sound work and progress. Points overlooked by the class-teacher are revealed, and miscalculations rectified; extra stress can then be put on where it is wanted. Closer *individual examination* is perhaps even more important; it may, indeed. serve all the purposes of class-examination, and more. The teacher should act as inspector from time to time, and after examining each child, award him an appropriate mark. This record of the exact condition of every child will guide the class-teacher and the head-teacher in dealing with him. General impressions, which are often misleading, need to be checked by such examinations in detail.

General Discipline, laying down the law and enforcing it, devolves on the head-teacher in the end. But a judicious head-teacher will avoid lowering the dignity of his subordinates by criticisms or rebukes given in the presence of the class.

(*c*) **Teacher.** In small and moderate-sized schools, the head-teacher *must* teach; in every case, he *should teach as much as he can* consistently with the performance of his other duties. He will often do more good by regular teaching than by supervision.

A well-organized school can spare the head-teacher for teaching; actual over-seeing may often stand over, to allow the best teacher in the school to utilize some of his peculiar ability. Apart from the intellectual advantage accruing to the scholars, the sympathetic bond between them and the master would be strengthened. (Note Moseley's "Tripartite System," and its chief excellence.)

Pattern teaching. In dealing with his pupil teachers, and sometimes even with assistants, the head-teacher ought to take a class occasionally for a whole lesson, and still more frequently for a minute or two in large schools, to *show them how* to deal with a special point, or how to go to work generally, to let them see the *teaching spirit* in operation, and learn how they may make their own work *enjoyable* as well as profitable. Taking part in the more mechanical lessons helps to vivify them, and to show how little excellencies of method may be brought in.

Certain lessons, involving higher power, or acquiring weight from his authority and position, come best from him—Bible lessons and religious exercises, for example. He may also well take other lessons under his

direct charge; good effects will follow, for example, if he will take a special lesson in Writing, or on the Principles of Arithmetic, or if he will give a Collective lesson regularly in a class once a week.

A good head-teacher will *distribute himself* over his school, even if he teaches nearly or quite all day. Some hold that his chief place is with the middle and lower classes, others that he should spend most of his time in the higher. Common practice accords most with the latter view. But he should see or *feel*, where he is most wanted, or where his teaching skil' an operate with best effect, and then act there.

(*d*) **Other duties.** Multifarious duties connected with the *general management* of the school, setting a *good example*, infusing a *right spirit*, sustaining its *reputation*, maintaining *friendly relations* with managers and parents, and, generally, making the school an *increasing power* for good in the district, fall to him.

All his duties will be modified by his surroundings, and it is impossible to say what these may be. In every case, he has to *lay himself out in the best way*. What that way may be cannot be stated; every man must feel, see, judge, and act according to his capabilities and lights,—he must fall back on himself. Good head-teachers are distinguished by a degree of *independence and strength of character*, a good deal of *versatility and "savoir faire,"* a power of *seeing* where they are most wanted, a faculty for *distributing themselves* well, and of *striking in forcibly* at the proper time and place. Some would say this just means that they are gifted with a respectable share of *common sense*, which they have accustomed themselves to use in their own walk of life.

2. **Assistants** ought to be what their name denotes—always ready to help, and apt at seeing where and how they may do so.

They are the **lieutenants** *of their chief, whom it is their duty to support.*

It is their duty, therefore, to study his aims and intentions, and endeavour to carry them out loyally, looking to the *spirit* even more than the letter.

Assistants are often placed in *charge of divisions* which are almost like separate schools of their own.

Though the organization will have been settled, they can watch for, suggest, and in some things test *improvements*. As divisional officers, they *supervise* and *teach*, keep *pupil teachers* employed, and generally, *keep their part of the school fully strung up*. They will certainly *teach*, and as certainly take *personal charge of different lessons*.

Assistants are *subordinates;* it is unseemly for them to try to usurp any of the head-teacher's functions, or to act in any way as though they were independent of him.

They may not let their own whims, or even their convictions, lead them to oppose their chief actively or passively. By discharging the duties of their present sphere in a proper way and a proper spirit, they are preparing themselves for higher responsibilities later on.

The head-teacher is responsible for the school; assistants are responsible to the head-teacher. It is his duty, therefore, to inspect, advise, and sometimes criticise unfavourably; at such times, a sensible and honourable assistant will receive criticism, adopt the advice, and act upon the hints, as loyal regimental officers would towards their colonel.

Whilst working within these limits, assistants may often influence the whole school, indirectly, but decidedly.

For example, the writer knew a case where an impetus was given to the home-lessons throughout a torpid school by a new assistant, who devoted extra pains to this department for a while, and stimulated the children by exhibiting a few of the best maps and home lesson books (after teaching the pupils what to do and how to do it), and by posting up the names of those who distinguished themselves most. Improvement soon became so marked, that other teachers copied from the assistant, with happy results.

Better methods, or improved forms of teaching can sometimes be introduced by assistants; these are likely to permeate the school. This, however, is not so frequent as assistants themselves are likely to imagine; here they must submit to the directions of their head-teacher.

A question is sometimes raised: *Shall assistants be made teachers of special subjects only, or shall they be put to a class, and take charge of it in all subjects?*

It is argued, that by confining the attention to one or two subjects, extraordinary skill and readiness is developed in dealing with them. On the other hand, it is urged, that such curtailment of work limits the view, cramps the ideas, and produces mechanical work; it is inimical to breadth; the teacher does not learn so much as he otherwise would about children.

Specialists are not wanted in primary schools; teachers with moderate all-round acquirements are better. In colleges, and with extra subjects in advanced classes, the case is different, and teachers who have made a special study of one or two subjects, and have had extra practice in teaching them, are to be preferred

Another question is: *Shall assistants be kept to one class?*

Usefulness to the school must decide; assistants must be content to sacrifice their predilections to this paramount consideration. Commonly it will be most advantageous to move them about from time to time; often, however, a teacher is evidently better fitted perhaps for a sixth class, perhaps for infants; his permanent place is then indicated.

Pupil teachers have a right to be moved about; practice in different parts of the school is essential to their proper training.

Graduates, or persons qualified by examination to become Graduates in Arts or Science of any University in the United Kingdom, and persons over eighteen years of age who have passed University and other examinations recognized by the Education Department, may become Assistant Teachers in Elementary Schools. These examinations are generally taken by pupils in private or secondary schools, and this permission serves as an inducement to some to join the ranks of the more highly trained teachers in the public school.

Dealing with Assistants. In a large school the head-teacher must act mainly through his subordinate officers. That he may do this well, they must *know* what he expects of them, and then they must *act* according to knowledge.

(*a*) With young assistants :—

Defect arises sometimes because *the head-teacher does not make his aims clear.* A well-planned class-scheme, with frequent consultation, and occasional direction and showing are desirable. At other times, *head-teachers do not assure themselves that subordinates are able to carry out their wishes;* some assistants will not bear much weighting, as teachers soon find out. Again, *head-teachers often fail to strike in* with sufficient determination, they are not *felt* as they should be.

A teacher may hope to impress much of himself on his *young assistants,* as well as on his pupil teachers. Being only broadly moulded as yet, they will take much of their ultimate shaping from him. Head-teachers of tact and power can deal with them as learners, and tell, advise, show, commend, reprimand, and insist, with advantage to these young teachers.

The case of older assistants is more delicate and difficult.

Older and experienced assistants must be treated with the consideration

their standing deserves; it would be quite out of place to act towards them as though they were junior assistants. Every experienced teacher has developed a way of his own, by following which he can do better work than in any other way. Such a man ought not to be worried or interfered with unduly. A head-teacher should rather consult with him, let him know his plans, tell him what methods have been used, intimate his wishes so far as necessary, and then judiciously leave him alone to work in his own way, so far as this is consonant with the general work of the school. Many other matters might be brought forward, but teachers who have such assistants, will themselves be men of experience, whom it is almost unnecessary to advise.

All assistants, of whatever standing, *have a right to kindly sympathy, and credit for what is creditable*, and to *considerate*, *courteous*, and *friendly* treatment. Yet the head-teacher must be careful *not to put himself into a false position*, by abstaining from saying plainly what needs to be said when rebuke or direction is called for.

3. **Pupil Teachers.** "A *pupil teacher* is a boy or girl engaged by the managers of a public elementary school, on condition of teaching during school-hours under the superintendence of the principal teacher, and receiving suitable instruction."—*Article* 34.

The pupil teacher system is essentially English; the name indicates the character of the young teachers; they are pupils for part of the day, teachers for the other.

Better than monitors from the first, towards the close of their course, when fully cognisant of the head-teacher's plans, and well drilled in his methods, pupil teachers are more useful in their own schools than average assistants drawn from outside. Because of the thoroughness with which they can be indoctrinated with the head-teacher's views and methods, their readiness to undertake all kinds of work, and on the score of economy, many preferred officering their schools almost entirely with pupil teachers. Other reasons are urged against this plan, and the English Education Department has reduced the number of pupil teachers who may be employed with each certificated teacher from time to time; at present there may not be more than three pupil teachers for the principal teacher, and one other for each certificated assistant-teacher in a school. Other Education Departments, which employ pupil teachers, make arrangements of their own.

Selecting pupil teachers requires great care, for the master's comfort, the benefit of the school, and the cause of Education.

The following points should be carefully looked to, it being remembered, however, that candidates are young and undeveloped, and that *promise* rather than riper actuality is all that can be reasonably asked for.

(1) *Moral Character;* honesty, earnestness, strength, good-temper, cheerfulness, docility.

(2) *Intellectual Power;* power to learn, acquire, methodize, and remember, and later on, to generalize and manipulate knowledge independently. A good stock of information to begin with is a great advantage.

(3) *Teaching Promise;* fair aptness to teach, coupled with liking for the work.

(4) *Physical Qualifications and Health;* freedom from deformity, strength to bear the strain of teaching and study during the period of rapid growth and bodily development.

(5) *Other Considerations, e.g.*, character of home and friends, and any other circumstances likely to augment or detract from the favourable reputation of the candidate.

Pupil-teacher training includes *making teachers* of them, and caring for their *intellectual culture.*

(*a*) **Cultivating teaching power** in pupil teachers requires *instruction* and *practice.*

Young teachers should be *taught* what to do, and how to do it, for the old rule holds for teaching as for other things. They may be furnished with a class-scheme, and with detailed directions for dealing with every subject. Full details cannot be given for everything at once, but correct outlines may, and minuter points can be worked in afterwards. They should be shown how to prepare lessons, as well as to give them, and not be left to their own lights and devices, to the detriment of the school, and the discouragement and disgust of the young teachers themselves. *Positive instruction in the art of teaching, frequent pattern-teaching* from the head-teacher, and abundant *practice under supervision,* taken together, constitute the *teaching* which should be provided.

Before a pupil teacher is given a class, he will need preliminary advice and direction. In his early years he should not be allowed to teach by himself in a separate class-room. The head-teacher should be at hand to watch, criticise, counsel, show, and help as need comes. Too much should not be imposed, the young teacher should not be overweighted or pressed beyond his powers, although he cannot be too soon trained to self-reliance, or be too early indoctrinated with the idea that as he acts and manages now, so is he likely to do in a school of his own.

(*b*) **Intellectual Training** for pupil teachers must be *based on the Department's Syllabus*, that the pupil teacher may pass his examinations. But, except in rare cases, it need not, and should not be confined to these limits.

Mere fulfilment of departmental requirements is all that can be demanded; but a generous treatment, and a liberal interpretation of one's obligations pay best, in greater satisfaction to the head-master, increased good-will and respect from the young teachers, and mere valuable help from them because of their enlarged power. Where pupil teachers have been well taught from the beginning, it is practicable not only to cover the prescribed syllabus, but to give them a good start in a language, or in some branches of mathematics or science.

Two things have to be borne in mind, *keeping up back work* and *making fresh acquirements*. *Training* as well as *knowledge* must be looked after; the way in which subjects are manipulated is as important with pupil teachers as with school-boys.

A plan which worked well in a school where several pupil teachers of different standing were employed, and where the pupil teachers could always be chosen from the best and most advanced scholars, was to *base the general instruction on what the advanced pupil teachers needed*, but so to arrange the work that juniors could do something with it. They might not answer so completely, but the plan made a demand on their highest force, prepared the way for better later on, and not infrequently revealed capabilities which were scarcely suspected. Weakness in juniors became a recapitulation for the seniors; the advanced knowledge of the seniors helped the juniors; difficulties when cleared up helped both. Commonly, in each subject, questions were set for juniors, which seniors also worked for recapitulation; frequently, however, juniors would attack parts, if not the whole, of the senior work. Some teachers who have stood well in examinations went through a few years of this training. In smaller schools, and with fewer pupil teachers, it would be easier, in some respects at least, to set and keep a high standard. The quality of the material, however, will always have its influence.

Work to a plan or time-table, even if it be modified at different periods of the year.

Pupil teacher *lessons may well be set for a week in advance*. If entered in a book on Friday, there is no excuse for mistakes, and the books serve as interesting and useful records.

Lessons come best early in the day. Book-work should as a rule be taken before school. Some written work is best taken then too, but other written exercises can be placed on the head-teacher's desk when school

begins, and dealt with after morning school. Little can be done when all are pressed on by the fag of a day's work.

Dealing with pupil teachers is *one of the most exacting yet most gratifying parts of a head-teacher's work.* In good cases, respect, gratitude, and friendship arise and remain permanently.

4. **Candidates on Probation.** This name is given to those young people who aspire to the office of pupil teacher. They must have passed an examination in the three elementary subjects, Reading, Writing, and Arithmetic, and also in Geography, Grammar, or History in Standard V. They must not be less than thirteen years of age at the beginning of the year of probation, which can only last one year.

5. **Monitors.** Under Bell and Lancaster, such teaching as was given was given by monitors. They have now been replaced by pupil teachers, and are now used to a very limited extent,—in most schools not at all.

Their function has been altered; they used to be teachers, now they are curators in the main, and teachers only in very easy subjects.

Yet they are often useful in mechanical work, and when the teacher is short-handed, and in some other cases.

The number of monitors is always limited.

Boys will gladly act as curators.

They will esteem it an honour to attend to the ink, or to the book-cupboard, or to get the maps and black-board and apparatus ready. Collecting pens and home-lesson books, and many other little services will be cheerfully rendered.

Central Classes for Pupil Teachers. In most towns, and in other places where circumstances permit, pupil teachers receive some of their instruction, especially in those subjects which call for the skill of specialists, in classes held at suitable places out of school hours. This instruction must be looked upon as supplementary to that given by the head-teachers, and should in no case be considered as entirely replacing it. A subtle bond ought to exist, where both parties do their duty mutually between any head-

teacher and his pupil teachers, and to this end their instruction ought never to be entirely separated from their school.

Central Classes for Scholars. In large towns such subjects as Cookery, Manual Instruction in Wood or Iron, Practical Chemistry, &c., involving the use of tools or apparatus by individuals are usually taught at specially fitted centres. The work of the class teacher in connection with this is confined, as a rule, to the correct registration of attendances at these centres. The teaching is generally by specialists, and as the change is somewhat exciting to young children, the presence of the class-teacher is someti— required to preserve discipline. A very clear and cordial understanding ought to prevail between the superintendent of the centre and the school teachers.

Peripatetic Instructors. A modification of the above is sometimes found in cases where Science Instruction is given by special teachers who go from school to school giving systematic lessons. The plan is of value for two reasons. In the first place the visiting teacher is able to deal with the subject in a masterly manner, since his attention is confined to a few kindred subjects. Secondly, there is considerable economy in apparatus. Boxes are packed with all the articles necessary for the lesson, which is given at several schools on the same day. The class-teacher should make very careful notes of the lesson in order that he may recapitulate the lesson once or twice before the next visit. Music, Drawing, and Drill are sometimes efficiently taught upon a similar plan.

THE SCHOOLROOM & ITS FURNITURE.

Schoolroom and fittings adapted to purpose. A good schoolroom is planned, built, fitted, and supplied with a view to some definite system of Organization and Teaching.

School planning is the science of thoroughly adapting every part of a building, even the minutest detail, to the work of school teaching. Convenience of plan, suitable lighting, proper sub-division into classes, and thorough ventilation, with warmth but without draughts, are its leading essentials. Attention to small points is of extreme importance. Sanitary laws are here as vital as in a hospital. The school-architect is recommended first to perfect his plan. His own skill should then enable him to clothe it with form, proportion, character, and colour.

1. **Planning and Accommodation.** In planning a school, the first thing is to seat the children in the best manner for being taught. The accommodation of each room depends not merely on its area, but also on its shape (especially in relation to the kind of desk proposed), the positions of the doors and fireplaces, and its proper lighting. The second point is to group the rooms together in a compact and convenient manner.

2. **Schoolrooms.** Every school must have a schoolroom as hereunder or a central hall as under Rule 7. The proper width for a schoolroom is from 18 to 22 feet. In a room 18 feet wide groups of long desks, three deep, should be used; where four rows are used the width should be 21 feet 6 inches; and if the width is 22 feet, dual desks, five rows deep, are most suitable.

(*a*) Accommodation in schoolrooms for elder children is calculated by the number of children seated at desks and benches, subject to a minimum of 10 square feet per child being provided.

(*b*) Double bank schools (now almost obsolete) require rooms 32 feet wide, walls left clear for three rows of desks, and ample lighting from windows on both sides extending to ceiling.

(*c*) Wasted space cannot be considered.

The doors and fireplaces in schoolrooms must be so placed as to allow of the whole of one side of the schoolroom being left free for the groups of benches and desks.

(*a*) No schoolroom lighted from one side only can be approved. The gable ends should be fully utilized for windows.

3. **Walls, Floors, and Roofs.** The walls of every schoolroom and class-room, *if ceiled at the level of the wall-plate*, must be at least 12 feet high from the level of the floor to the ceiling; and, if the area contain more than 360 superficial square feet, 13 feet, and, if more than 600, then 14 feet.

(*a*) The walls of every schoolroom and class-room, *if ceiled to the rafters and collar beam*, must be at least 11 feet high from the floor to the wall-plate, and at least 14 feet to the ceiling across the collar beam.

(*b*) Great care should be taken to render the roofs impervious to cold and heat.

(*c*) Roofs open to the apex are not approved. They can only be permitted where the roofs are specially impervious to heat and cold, and where apex-ventilation is provided. Iron tie-rods are least unsightly when placed horizontally.

(*d*) The whole of the external walls of the school and residence must be solid. *If of brick*, the thickness must be at least one brick and a half; and *if of stone*, at least 20 inches.

(*e*) All walls, not excepting fence walls, should have a damp-proof course just above the ground-line.

(*f*) The vegetable soil within the area of the building should be removed, the whole space covered by a layer of concrete not less than 6 inches thick, and air bricks inserted in *opposite* walls to ensure a through current of air under floors for ventilation to joists.

(*g*) Timber should be protected from mortar and cement by asphalte or tar.

4. **Entrances.** Entrances should be separate for each department. In large schools more than one entrance to each department is desirable. The principal entrances should never be through the cloak-room. Entrance doors should open outwards as well as inwards. A porch should be external to the schoolroom.

5. **Cloak-rooms and Lavatories.** Cloak-rooms must be external to schoolrooms and class-rooms, with gangways at least 4 feet wide, amply lighted from *the end*. Hat-pegs should be 12 inches apart, numbered, and of two tiers. The hanging space necessary to provide a separate peg for each child is thus 6 inches lineal.

Thorough ventilation is essential, so that smells are not carried into the school.

Lavatory basins are needed. The girls' schools require a larger number than boys' or infant's.

A lock-up slop sink, water tap, and cupboard are desirable for the caretaker.

6. **Class-rooms.** Class-rooms are calculated at 10 square feet if not providing accommodation for more than 60 children. Six rows of dual desks or four rows of long-length desks are permissible in such class-rooms. When the front of a class is narrowed, but the area of the room is not reduced, a seventh row of dual desks or a fifth row of long desks may be allowed. Rule 2 applies to all rooms providing accommodation for more than 60, or being more than 24 feet 8 inches deep from the window wall.

(*a*) The minimum size of class-room is 18 feet by 15 feet. If desks are placed longitudinally the width should not be less than 16 feet. This latter width is also allowed in schoolrooms of very small size.

(*b*) The class-rooms should never be passage-rooms from one part of the building to another, nor from the schoolrooms to the playground or yard, and should be on the same level as the schoolroom. Each should be easily cleared without disturbance to any other room. Doors should open both ways.

(*c*) The number of class-rooms should, where practicable, equal the number of classes in the schoolroom; usually five class-rooms are necessary for the six standards.

(*d*) The excessive use of movable partitions should be avoided.

7. **Halls.** Large schools are sometimes planned with a central hall, from which the class-rooms are entered, and which is not, as a rule, calculated in the accommodation.

In the case of mixed schools an exception is made, one class being necessary in the hall in order to secure a teacher's supervision of the separate exits to the latrines; the hall, must, therefore, be suitable for teaching such class; it must be fully lighted, warmed, and ventilated, and must contain a floor space of not less than 1,200 square feet, and the position of the class should be marked on the plan.

Halls of excessive size are not approved.

8. **Windows.** Every part and corner of a school should be fully lighted. The light should, as far as possible, and especially in class-rooms, be admitted from the left side of the scholars. This rule will be found greatly to influence the planning. All other windows in class-rooms should be regarded as supplementary, or for summer ventilation. Where left light is impossible, right light is next best. Windows full in the eyes of teachers or scholars are not approved. In rooms 14 feet high any space beyond 24 feet from the window wall is insufficiently lighted.

(*a*) Windows should never be provided for the sake merely of

external effect. All kinds of glazing which diminish the light and are troublesome to keep clean and in repair should be avoided. A large portion of each window should be made to open for ventilation and for cleaning.

(*b*) The sills of the main lighting windows should be placed about 4 feet above the floor. And the tops of some should reach nearly to the ceiling with a portion made to swing. The ordinary rules respecting hospitals should here be remembered. *Large spaces between the window heads and the ceiling are productive of foul rooms.*

(*c*) Skylights are objectionable, and should never be resorted to where windows are possible. Plans needlessly involving their use cannot be approved, except in the case of central halls having ridge or apex ventilation.

9. **Staircases.** A staircase like a porch must be external to the schoolroom. No triangular steps or "winders" should be used. Each step should be about 13 inches broad, and not more than 5½ to 6 inches high. The flights should be short, and the landings unbroken by steps. The number of staircases should be sufficient, not only for daily use, but also for rapid exit in case of fire or panic.

10. **Ventilation.** Apart from open windows and doors, there should be provision for copious inlet of fresh air; also for outlet of foul air at the highest point of the room; the best way of providing the latter is to build to each room a separate air chimney carried up in the same stack with smoke flues. An outlet should have motive power by heat or exhaust, otherwise it will frequently act as a cold inlet. The principal point in all ventilation is to prevent stagnant air. Particular expedients are only subsidiary to this main direction. Inlets should provide a minimum of 2½ square inches per child, and outlets a minimum of 2 inches. Rooms should, in addition, be flushed with fresh air from windows about every two hours.

A sunny aspect is especially valuable for children, and important in its effects on ventilation and health.

(*a*) Although lighting from the left hand is considered so important, ventilation in summer demands also the provision of a small swing window as far from the lighting as possible, and near the ceiling.

11. **Warming.** The warming should be moderate and evenly distributed so as to maintain a temperature of from 56° to 60°. When a corridor or lobby is warmed, the rooms are more easily dealt with, and are less liable to cold draughts. Where schools are wholly warmed by hot water, the principle of direct radiation is recommended. In such cases open grates in addition are useful for extra warming occasionally, and their flues for ventilation always.

(*a*) A common stove, with a pipe through the wall or roof, can under no circumstances be allowed. Stoves are only approved, when

(i) provided with proper chimneys (as in the case of open fires);

(ii) of such a pattern that they cannot become red-hot, or otherwise contaminate the air;

(iii) supplied with fresh air, direct from the outside, by a flue of not less than 72 inches superficial; and

(iv) not of such a size or shape as to interfere with the floor space necessary for teaching purposes.

(*b*) A thermometer should always be kept hung up in a school in a central position.

12. **Sanitary Arrangements.** Water-closets within the main school building are not desirable, and are only sanctioned for female teachers. All others should be at a short distance, and completely disconnected from the school. Privies should be fully 20 feet distant.

(*a*) The doors, staircases, and passages leading from the schoolroom to the latrines (whether in mixed or in other schools), and the latrines themselves must be separate for the two sexes, and constructed entirely apart from each other. In the case of a mixed school this rule especially affects the planning. Where passages or corridors are *unavoidably* used by both sexes, there must be complete supervision from the class-rooms by sheets of clear glass.

(*b*) Each closet must be not less than 2 feet 3 inches wide nor more than 3 feet, *fully lighted and ventilated*, and properly screened or supplied with a door. More than one seat is not allowed in any closet.

(*c*) The children must not be obliged to pass in front of the teacher's residence in order to reach their latrines.

(*d*) The following table shows approximately the number of closets needed:—

——	For Girls.	For Boys.	For Infants.
Under 30 children	2	1	2
,, 50 ,, ...	3	2	3
,, 70 ,, ...	4	2	3
,, 100 ,, ...	5	3	4
,, 150 ,, ...	6	3	5
,, 200 ,, ...	7	4	6
,, 300 ,, ...	8	5	7
		Urinals in proportion.	

(*e*) Cesspits and privies should only be used where unavoidable, and should be at a distance of at least 20 feet from the school. Earth or ash closets of an approved type may be employed in rural districts, but drains for the disposal of slop and surface water are still necessary. The proximity of drinking-wells should be carefully avoided.

(*f*) Soil-drains must always be laid outside the building (on a hard even bottom or concrete) in straight lines with glazed stoneware pipes, carefully jointed in cement, and made absolutely water-tight. A diameter of 4 inches is sufficient, unless for drains receiving the discharge of more than 10 closets. Above this number the diameter should be 6 inches. The fall should never be less than 1 in 30 for 4-inch, and 1 in 40 for 6-inch drains. An inspection opening or chamber should be provided at each change of direction, so as to facilitate cleansing the drain without opening the ground. Every soil-drain must be disconnected from the main sewer by a properly constructed trap placed on the line of drain between the latrines and the public sewer. This trap must be thoroughly ventilated by at least two untrapped openings; one being the 4-inch soil pipe carried up full size above the roof, and the other an inlet pipe connected with the side of the trap furthest from the public sewer. Automatic flushing tanks are desirable where trough closets are used.

(*g*) Urinals must in all cases have a sufficient supply of water for flushing.

(*h*) Waste pipes from sinks or lavatories should be first trapped inside, and then made to discharge direct through the wall over a trapped gulley.

13. **Desks.** Benches and desks, graduated according to the ages of the children, should be provided for all the scholars, and placed at right angles to the light.

An allowance of 18 inches per scholar at each desk and bench will suffice (except in the case of the dual desk), and the length of each group should therefore be some multiple of 18 inches, with gangways of 18 inches between the groups and at the walls. In the case of the dual desk the usual length is 3′ 4″. and the gangways 1′ 4″.

(*a*) The desks should be *very slightly* inclined. An angle of 15° is sufficient. The objections to the inclined desk are, that pencils, pens, &c., are constantly slipping from it, and that it cannot be conveniently used as a table. The objection to the flat desk is, that it has a tendency to make the children stoop. A raised ledge in front of a desk interferes with the arm in writing.

(*b*) No benches and desks should be more than 12 feet long. And no group of long desks, in a schoolroom providing for more than 60

children, should contain more than four rows of benches and desks (or three, if the width is less than 21 feet 6 inches), *because in proportion as the depth is increased, the teacher must raise his voice to a higher pitch; and this becomes exhausting to himself, while at the same time it adds inconveniently to the general noise.*

With the use of the dual desk the space between seat and desk disappears, as the children stand in the gangways.

14. **Sites and Playgrounds.** Every school should have an open airy playground proportioned to the size and needs of the school. The minimum size of site is, in the absence of exceptional circumstances, a quarter of an acre for every 250 children. If the school is of more than one story this area may be proportionately reduced. The minimum open space is 30 square feet per child.

(*a*) In the case of a mixed school, playgrounds must be separate for the boys and girls.

(*b*) All playgrounds should be properly levelled, drained, enclosed, and fitted with some simple appliances. A portion should be covered, having one side against a wall. A covered way should never connect the offices with the main building. Buttresses and corners should be avoided.

(*c*) An infant school should have its playground on the same level as the school, and open to the sunshine.

15. **Infant Schools.** Infants should not, except in very small schools, be taught in the same room with older children, as the noise and the training of the infants disturb and injuriously affect the discipline and instruction of the other children.

(*a*) There must be no opening wider than an ordinary doorway between an infants' and any other schoolroom, because of the sound of the infant teaching

(*b*) An infant school (and playground) should always be on the ground floor, and if more than 80 scholars are admitted, should have one gallery and a small group of benches and desks for the occasional use of the older infants.

(*c*) No infant gallery should hold more than 80 or 90 infants. It should be well lighted from one side. The light for object lessons is as good from the right as from the left.

(*d*) The width of an infant schoolroom should be in proportion to its size, but not more than 24 feet. A covered marching-ground is desirable.

(*e*) The babies' room should always have an open fire, and be maintained at a temperature of about 65°. As a rule it should not contain more than 50 children. Large schools may require two

communicating rooms for babies, one fitted with low Kindergarten desks, the other providing ample floor space for exercises.

(*f*) The accommodation of an infant school is calculated at 8 square feet for each child, after deducting wasted or useless space, but a larger area should be allowed wherever practicable. Care should be taken that the numbers are conveniently seated, and that space is left for marching. Where a Second Standard is taught in an infant school the accommodation for it is calculated at 10 square feet per child.

Miscellaneous Hints.

Ink and ink wells, if let into desks, should be placed to the right of the child. "Hat" ink wells, with a depression within the rim (to catch waste ink), and a narrow opening for ink (to prevent admission of dust), are recommended, especially if made of earthenware.

Covers for ink wells seldom last long.

A *frame or tray* for carrying the wells when removed for cleaning, and a *can* with a spout, or a small-lipped *jug* for filling them should be kept.

Class Slates are best framed, and are more durable if bound with wire. They should be ruled on one side. A frame, large enough to fit *over* the frame of the slate, in which stout iron wires are fitted at proper intervals, is very convenient for ruling. Lines can be marked in with an old knife, or even with a nail.

Some teachers provide sponges, fastened to the desks with about 18 inches of string, and have alternate ink wells (with wide mouths) filled with water; children can then clean their slates readily.

Slate pencils should be of sufficient length, and should be kept pointed. But if provided by the school, they should not be allowed to lie about; monitors would keep them sharpened. Children can be easily led to provide their own pencils, and to keep them sharp, and this is best. Pencil cases serve to use up short pencils. All these little things need careful looking to.

Black-boards should be stout and durable, of fair size but not cumbrous. One side should be plain, the other ruled, perhaps with Mulhaüser's rhomboids. A special board should be ruled for music. A small box at the bottom is convenient for lodging chalk.

As a rule, an *easel* is the most convenient means of exhibiting the black-board, and an easel and black-board should be provided for each class.

The easel may be fitted with rings for pegs, and for pointer, as well as with a box for chalk, and a sliding T support for maps. Easels and black-boards should be kept in a convenient appointed place.

Large-framed slates are sometimes substituted for black-boards; they are more cleanly, but more expensive.

Instead of an easel, the black-board or slate may be mounted on a swing frame, so arranged that the board may be turned at an angle. This is convenient in many ways, but it takes up more room, and may get out of order.

Or large boards for advanced classes may be made to slide vertically like an ordinary window sash. Occasionally we find them suspended from a pulley, and at other times fixed to the wall; this last plan cannot be recommended.

Cupboards, as capacious and numerous as circumstances admit, are absolutely necessary to the proper furnishing of a schoolroom. Glass doors are an incentive to tidiness, and where they can they should be introduced, for an absence of this virtue is sometimes detected. Special cupboards are necessary for science apparatus and kindergarten objects, and now a museum cupboard is obligatory. This latter should be provided with shelves sloping slightly towards the front, for the better display of the objects it contains, and its contents should be as far as possible well within the view of the children.

The decoration of school walls is a matter to which considerable attention should be paid. It is well to supplement maps by pictures, such as those published by the Art for Schools Association, diagrams, small museum cupboards, &c. A medium between overcrowding and bareness should be aimed at, but the question of cleanliness and tidiness is important. Two maps should never be seen on one nail, the rollers should be properly fastened on, and the map itself should hang properly.

Time-Table, &c. The official copy of the Time-Table must have a conspicuous place, as also a copy of the "Conscience Clause." It is well to provide a notice board for the exhibition of any matters of general interest, and small black-boards in which the percentage of attendance made by the various classes may be written weekly, and also the number present at each school meeting. If there is no suitable portion of the walls or partitions available, some provision should be made by bands of stout tape or light panels of wood for the exhibition of excellent specimens of examination papers, drawings, or maps worked by the pupils.

PRINCIPLES.

Empirical and Philosophical Knowledge. All knowledge is either (1) *Empirical*, that * a thing is, facts and results of experience, or (2) *Rational and Philosophic*, why † a thing is, reasons and knowledge of causes. Full knowledge includes both.

One-sided knowledge produces either empirics or theorists.

Science and Art of Education. The Science of Education is chiefly a matter of *Knowledge*, the Art of Education a matter of *Practice*.

The Science of Education includes facts, principles, and rules for action. Reliable generalizations have been reached by (1) carefully *observing*, collating, and classifying facts; (2) *discovering general laws* or principles which underlie and explain the facts; (3) testing and *verifying* the generalization by practice, *i.e.*, noting whether it holds true in all cases or not. *Rules* for acting are deduced from generalized principles thus obtained.

The Art of Education. Practical Education may be either Empirical or Rational. Rational practical Education consists in consciously and thoughtfully applying Principles and Rules, so as to reach a desired end.

Note that *Art must precede Science;* processes must come before laws. Without experience, without watching the effects produced by teaching, there could be no generalizations about it, and no Science of Education.‡ "Practice may not only exist independently of theory, but must have preceded the theory." §

Empiricism in Teaching. Too often, teaching is "*an Art without Principles*."

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* τὸ ὅτι — the *that;* † τὸ διότι — the *because.* See Hamilton, *Metaphysics* i., pp. 55–58.

‡ See Thomson, *Laws of Thought*, pp. 1–3.

§ Whately, *Logic*, *Introductory chapter.*

No intelligent man can be long employed in teaching, without making some generalizations for himself. Some, however, who pride themselves on being "practical men" are markedly one-sided; they produce results without knowing why. These would do better if they would throw the windows of their intelligence wide open, and examine, test, and criticize their work by the light they might obtain. If a teacher is to know but one side of his business, let this be the *practical* part by all means, but he cannot know this as he should, unless he have reasons for his practice, *i.e.*, unless his methods are consciously grounded on an intelligent insight into child-nature, child-need, and child-capacity.

"*Common-Sense*" is indispensable, but this is not enough. George Combe writes: "In the business of Education every man thinks common-sense all sufficient, and each calls his own notions on the matter common sense. No need of the Philosophy of Mind, they imagine, for the mother and the teacher; *i.e.*, human nature can be trained in ignorance of its true nature! But, in fact, every man whose business it is to deal with the human Mind has a system of Mental Philosophy of his own, according to which he decides and acts. It may be a very imperfect system; he may not recognise it as a system; but still it serves him as one, and by it he tries whatever questions may arise in which mental acts or processes are involved. In this case, such a man, in lack of a standard of Mental Philosophy, takes himself as a standard." *

Method, not founded on Principles, must be "a thing of accident,—at best a combination of expedients with no consciousness of one purpose; if right at any time, only right by chance." †

Rational Method. Good methods must have a *rationale;* they conform to laws, which would serve as standards to direct, regulate, and systematize our practice, if we were acquainted with them.

"Would not Education be necessarily rendered more systematical and enlightened if the powers and faculties on which it operates were more scientifically examined and better understood? What is the whole business of Education but a practical application of rules, deduced from our own experiments, or from those of others, on the most effectual modes of developing and of cultivating the intellectual faculties and the moral principles?" ‡

"The phenomena of intelligence conform to laws,—the evolution of

* Combe, *Education, etc.*, edited by Jolly.

† Currie, *Early and Infant Education*, p. 18.

‡ Stewart, *Philosophy, etc.*

intelligence in a child conforms to laws,—Education cannot be rightly guided without a knowledge of these laws. Hardly any parents, and but few teachers, know anything about Psychology,—the right class of facts is [often] withheld, the wrong class is [often] forcibly administered in the wrong way and in the wrong order." *

Whenever we teach well, the goodness of our teaching depends on its conformity to natural laws. This conformity may be *fortuitous;* it may be *intelligent* in varying degree; it may partake of *both* characters. But all sound methods of teaching and training are sound because they harmonize with the fundamental laws of the Physical, Intellectual, and Moral nature.

Knowledge of Method may be obtained (1) *inductively,* from observation and experience; (2) *deductively,* from the known laws of Mind and of child-nature. The first is the "practical," the second the "theoretical" plan.

Both may be combined,—empiricism rationalized by referring plans to principles, and theoretical deductions shaped by putting them to the test of experience.† Each may thus complete and correct the other.

A well-furnished Teacher can deal with children rationally. This involves (1) special *knowledge,* and (2) that peculiar *skill* in applying knowledge, known as "teaching ability."

(1) **Knowledge** (*a*) of the *material* to be acted upon; some understanding of what a child is, his powers with their complexities and modes of action, and what he may become either for good or evil according to his training; a clear idea what to *aim* at.

(*b*) Of the *agencies* which can be brought to bear for developing what is good and desirable, and for restraining or eradicating the bad and undesirable, and generally for influencing, regulating, and guiding; of the *direction* in which these work, *how far* they may be relied on, where other forces must be called in, and the limits to the action of them all.

(2) **Practical Skill** in applying knowledge, in selecting and using the best tool for the immediate object and with reference to the ultimate aim, is the other factor.

Principles are generalizations from observed facts, whose soundness has been proved by experience.

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* Spencer, *Education, Intellectual, etc.*, ch. i.

† See Bain, *Education as a Science*, p. 230.

Facts of child-nature, *Principles* of Education, and *Rules* for teaching are all connected, though they are distinct from one another. (1) *Fact* of human-nature, "Man has native powers or faculties which are developed by being suitably used;" (2) *Educational Principles* connected with this fact, "Good method provides suitable exercise for the powers on which it proposes to act;" "Practice makes perfect;" "Self-activity is indispensable to improvement;" "It is not what the teacher does, but what the child does, that educates." (3) *Rules* based on these Principles, "Provide suitable exercise;" "Test your work by what you get from your pupils, rather than by what you do yourself;" "Keep children at (proper) work;" &c.

Stated boldly, Principles are often disappointing in their apparent simplicity; they are uninviting in their abstract form; there is also a calm frigidity about them which is almost repellant to some. But if the *Science* of Education should seem precise, cold, and emotionless, educational *practice* must have energy, warmth, and life.

The Principles of Education are enunciated here and there in works on Physiology, Logic, Ethics, and Psychology. Study of children, recollection of our own childhood, self-introspection, later observation of children from our standpoint as teachers, watching the results of our own and of others' work, and intercourse with our fellow teachers, supplement what we may gather from reading.

Use and Limitations of a knowledge of Principles. (1) *Sound methods accord with Principles*, even if the methods be not consciously based upon them.

"Knowledge is power" here; the more we know, the more we can do.

That teacher who has a good stock of Principles at command, has in them enlightening, suggestive, and regulating agents, which will save him from no little blundering, and from much groping in the dark, will direct his practice, and enable him to gauge his methods. *He can adapt means to ends intelligently*, instead of following a routine he does not understand. As every sound method must conform to the fundamental laws of child-nature, *he is more likely to conform to these laws if he know them*, than if he be ignorant of them.*

Should any one object that there is as yet so much controversy about educational principles, that it is useless to trouble about them, it may be answered that a little light is better than none, and that it is folly to refuse what is available. But, in fact, the greater part is settled, and the con-

* See Mill's argument, *Logic*, i., p. 12 (ed. 1843).

tentions which are going on are mainly struggles for "more light," sc far as they are healthy.

The greater breadth of view and the deeper knowledge now advertec to, renders a teacher *less likely to get into a groove,* and *helps him on to wards a higher ideal;* both tend to *ennoble his work and his character* Further, his enjoyment and success increase with his power to *apply hi knowledge,* to *explain differences of character,* to *see wherein the difficulties* o his work really *lie,* and partially at least, *to account for success and failure* All this raises him from "an artisan" to "an artist;"* he becomes a *master* in his profession.

Whilst Knowledge of Principles increases one's potentialitie and breadth of view, *it will not of itself make a teacher.* Teaching skill is largely "an *incommunicable* knack;" *only a part of the ar of teaching is teachable.*

If a teacher cannot *apply* his knowledge to practice, or use Principles fo suggestion and for testing—if they do not enable him to do better *prac tical* work, they are of scanty use to him. He would indeed be better off if he could exchange this class of knowledge for a few workable methods even of the rule-of-thumb kind.

Teaching demands special aptitudes apart from knowledge. It is well t be acquainted with great generalizations, but there must also be the powe of inventing, devising, planning, and then acting in detail with intelligen reference to aim, means, and material. Some dislike this work, other are incapable of it; both classes therefore ask for "plain directions," ready-made rules, and advice in detail. Minute advice and suggestion has been pushed almost to an extreme in parts of this book, that its help fulness may be increased but *the value of rules is in the way they ar applied;* also *a teacher cannot apply a rule well, until he has made it hi own.*

Meaning and Object of Education. The aim and end o Education is the *harmonious development* and training of all the powers of a man, with a view to their fullest and noblest use.

This involves *imparting knowledge,* not else readily obtainable by the learner, and *training faculty* by exercising it judiciously.

"Education aims to bring out and train up, in due time and in their proper seasons, all that constitutes man." †

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* Carlyle's terms.

† Gill, *School Management.*

"How may the child and youth be developed healthfully and vigourously, bodily, mentally, and morally?" *

George Combe tells us that Education should *quicken* faculties which are too slow, *strengthen* those which are feeble, *repress* those which are over-active, and *direct* the whole to their proper objects. We must teach the child *what it is, where it is, what it ought to do, and how it should do it.* †

The ideal of a liberal Education is to train faculty and develop aptitudes, rather than to impart specific knowledge. ‡

Different views respecting the objects of Education and the means of reaching them have been held from time to time. The following will serve for comparison:

For the Parthians, it was enough if their boys were taught "*to ride, to shoot with the bow, and to tell the truth;*" this training fitted a man to hold his own, and to do his duty in that early society.

Milton's ideal is like the man, and is suited to his Puritan time. "*I call a complete and generous Education, that which fits a man to perform justly, skilfully, and magnanimously, all the duties of all offices, public and private, in peace and in war.*" §

Different as these are in form, there is substantial agreement in purpose in the two statements. The object or aim in both cases is *to enable a man to play a true man's part in his day and generation.*

So also with Spencer, "How to live?—that is the essential question for us.—The general problem which comprehends every special problem is—the right ruling of conduct in all directions under all circumstances. *To prepare us for complete living* is the function which Education has to discharge." ||

Education is the total action of those external agents which make a man what he is.

This refers to Education as a *process*. The *result* of good Education is expressed in the phrase "a well-educated man."

Means of Education. Whatever helps to shape the human being, to make the individual what he is, or hinder him from being what he is not, is part of his Education." ¶

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* Youmans.

† Jolly's *Combe*, p. 18.

‡ See Fowler's *Locke, Education*, p. 118.

§ Milton, *Tract on Education.*

|| Spencer, *Education: Intellectual, etc.*

¶ J. S. Mill, *Address at St. Andrew's.*

All the experiences under which a human being is brought have some influence upon him, and are so far educative. Informal as well as formal recognised agencies have to be considered; home, parents, friends, companions, and general surroundings are working as well as the teacher and the school.

It is manifest also, that the moulding process goes on so long as a man is subject to small influences; Education therefore, as we are here regarding it, is a lifelong process, though it has its recognized stages, corresponding to life-periods, infancy, childhood, youth, early manhood and womanhood.

The broad work of the elementary school is to supply that general substratum of sound acquirement and development which will enable scholars at the end of their course to enter on the next stage of their career with readiness.

One cannot go into full detail, but the following is something like what we may aim at. Children should *read* easily, be able to *commit their thoughts to paper* without difficulty, *write* a free legible hand, and *calculate* quickly and accurately, have a fair acquaintance with *History* and *Geography*, know the names, history, qualities, and uses of *things about them*, including their own bodies, and be reasonably skilled in *applying* what they know. Ability to *draw* and *sing* is also desirable.

This is an outline of its chief *Intellectual* furnishing and training work. *Moral* teaching and training goes on at the same time, directly and indirectly; children at the end of their elementary course should know Wrong from Right, and should have a fair degree of Moral strength developed by Practice in doing *Duty*. *Religious* teaching and training is often provided in addition to simple Morality. *Physical* training is less direct, coming in as an adjunct and help to other branches. *Æsthetic* training is mainly indirect, coming through pictures, neatness in the room, and general finish in the work; drawing, painting, music, and other subjects minister to it specially. *Technical* training as such scarcely comes in at all; yet many lessons may be so given as to provide a form of this training, or at all events a foundation on which it may subsequently rest (lessons involving actual measuring and constructing, object lessons in which *the how* things are made, &c., may be instanced).

SUMMARY OF LEADING EDUCATIONAL PRINCIPLES.

NOTE. *The Principles of Education touch one another at many points. In attempting, therefore, to group several Principles or Rules about a few leading statements, the same thought (or a cognate thought) is often originated from more than one starting-point. Under these circumstances, the writer has not scrupled to repeat at times what has been said before in another connection.*

1. **Good method accords with nature.** "*Nature is to be ruled only by obeying her.*" * Sound aims, methods, and systems are in harmony with child-nature.

Whence, knowledge of child-nature is essential for proper dealing with children. "*They who would teach children well must first learn a great deal from them.*" † "*The art of Education is to follow Nature, to assist and imitate her in her way of rearing men.*" ‡

2. "**Education perfects Nature.**" "Art improves Nature." The educator methodizes and completes what Nature begins.

Nature never tells or generalizes; she teaches by experience alone; we learn to conform to her rules by the evil consequences which certainly follow from breaking her laws. But a child may injure himself through ignorance; *e.g.*, by touching the (pretty) fire; here teaching is wanted. *Telling, explanations, and rules* should be minimized, but they *have a place.*

Again, Nature provides the raw materials of knowledge in bewildering profusion; no one of himself could hope to select, arrange, and acquire, in this boundless mass of unsorted details. Formal Education should *select, arrange, and classify* the objects Nature provides, *and present them to the learner in sufficient abundance* for him, and *without needless repetition.*

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* "*Natura non nisi parendo vincitur.*" Bacon.

† *Gallaudet, quoted by Dunn, Principles of Teaching*, p. 157.

‡ Wilderspin.

Once more, Faculty, acting under native prompting alone, is likely to act injuriously. Appetite, for example, may lead to excess; non-experience may allow one to do unwise things, or to take profitless or wrong paths. Instruction and Training should *reduce if not obviate danger*, partly by pointing it out, and partly by showing a better road. It can *save one from wasting force* in pursuing useless ways, though inviting, by recounting the experience of others.

Payne observes that, *Nature's plan of teaching has these marks:* *

No fuss: she is eminently quiet.

Objectivity: "she furnishes knowledge by object-lessons." "Things! Things!" are what she offers to the learner. These, however, are offered lavishly, and without arrangement.

"*Action! Action!*" Faculty is set to work, or made to act.

Experience alone;—no telling, explaining, advising, nor scolding, but solely by the discipline of consequences. Mal-observation, carelessness, mistakes, wrong action, are invariably followed by ill-results.

No generalities; she leaves the learner to construct them. This he does in the following order:—

(1) From objects, *concrete* things, he goes on *to* what is *abstract*.

(2) From *single* facts, he proceeds *to generalizations*.

(3) *Rules and Definitions* are made last of all.

Nature's plan, as here summarized, is full of suggestiveness; it may, however, be pushed to absurdity in teaching.

3. **Faculty acts in accordance with law.** The action of the natural powers may be obscure, but it is never capricious.

Some laws of child-nature are generally acknowledged, others are dimly seen and imperfectly understood, some perhaps are not yet seen at all. A good deal of light is available, and we may stand in it if we will.

4. **There is a natural law in which Faculty offers itself for development.** Different forms of Faculty have their own periods of maximum plasticity, activity, and strength.

"There is a natural process of Evolution which is not to be disturbed without injury;—we must not force on the unfolding Mind artificial forms:—Psychology discloses to us a law of supply and demand, to which, if we would not do harm, we must conform." †

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* See *Practice and Art of Education.*

† Spencer, *Education, Physical, etc.*

The recognised order is, (1) *Sense Perception*, (2) *Representation* (with which are connected Reproductive and Constructive *Imagination*), and (3) *Thought Proper*, including *Abstraction*, *Generalization*, *Conception*, *Judgment*, and *Reasoning*.

This statement about the order of development is suggestive in two ways,—

(1) *As to the kind of faculty offering itself at different stages of child-development.* We see, for example, that Sense-Perception comes first, and is most active with young children; in this we have a reason for object teaching and objective illustration when dealing with them. On the other hand, they are not ripe for deep thinking; it would be out of place to urge young children for reasons, except of the easiest kind, or to ply them with abstractions and generalizations.

(2) *As to the method to be pursued in almost every lesson.* (*a*) The first point is to obtain clear *Perception*, to form clear Ideas. For this, clear statement, picturing out and unfolding, objective illustration, explanation, and restatement are needed. (*b*) *Exercising the learner in using his Ideas*, setting such higher forms of Intellect to work as can be got at. The object here is to fix the Ideas, and to incorporate them with other Mind stores, as well as to strengthen the Faculties themselves.

There is a best time for everything in Education. Good teaching is suited to the learner's present capacity. It is bad economy to employ present weakly force on what can be taken up easier later on, when power has grown. Abstruse knowledge may be driven into the immature Memory by dint of reiteration; even a degree of Thinking power may be forced on before its time; any good result thus achieved, however, is more than counterbalanced by waste of force, and it may be, by unhealthy development.

"In children—both mind and body are nimble but not strong; they can skip and frisk about with wonderful agility, but hard labour spoils them both. In maturer years they become less active and less vigorous, more capable of fixed application, and can make themselves sport with that, which, a little earlier, would have affected them with intolerable fatigue." *

Bain, treating of the order in which subjects should be taken up, takes up the subject first on the *Psychological*, and then on the *Logical* side. †

* Cowper, quoted in Jolly's *Combe*.

† *Education as a Science*, chaps. VI. and VII.

"Psychology must ever be the chief part of a *Science* of Education."

The *Psychological Order* of Subjects is determined by Mental Power at the time; this is apparently connected with brain-growth. Such maxims as "Observation precedes Reflection," "Concrete before Abstract," are a recognition of Psychological facts. But there is much haze about the whole matter, and consequently much indefiniteness in practice.

The *Logical Order* of Subjects is based on their relative simplicity and dependence on one another. The two fundamental and practically inclusive cases are (1) *Simple to Complex*, (2) *Particular* (and Concrete) *to General* (or Abstract). Special cases dependent on them are (*a*) *Indefinite and Unqualified to Definite and Qualified* (first notions being *broadly correct*, the teacher subsequently correcting minor misconceptions, and *accurate detail*); (*b*) *Empirical to Rational or Scientific* (facts first); (*c*) *Conception of a complex whole requires distinct conception of its parts* (power to construct demands ability to deal with the elements from which we construct); (*d*) *From Outline to Detail, from Whole to Parts* (well illustrated in teaching History, where we begin with a few leading epochs, then intercalate others, then others more minute, and so on). (*e*) *From Physical, Corporal* (Tangible, Sense-Perception) *to Mental, Incorporeal* (Intangible, Thought proper).

Note. Neither order can be strictly followed; yet the enumeration is of value. For an enumeration of cases in which Logical Sequence does not apply, and others in which it is doubtful, consult Bain, "Education as a Science," chap. VII.

On the difficult stage in teaching, *proceeding* **from the Concrete to the Abstract**, Bain makes some pregnant remarks.

"For a general or Abstract Notion, *the essential preparation is in the Particulars.*"

(1) *Select Particulars so as to show extreme varieties and varied forms.* "Roundness," for example, should be illustrated and shown by round things, differing in size, colour, material, situation, &c. The chief idea should be made prominent, and the adjuncts subordinate.

(2) *Average examples so as to bring out agreements and differences easily.* Compare numbers by juxtaposition of beads, triangles in the same way, and so on.

(3) *Multiply instances.* Give example upon example, "until all disparities are sunk beneath the pressure of agreement."

Contrast is a device of great use in (2) and (3)—circle and oval, different forms of triangle, white, black, and coloured, &c.

(4) *Use the counter-forces which favour Abstraction.* Though the Mind is naturally reluctant to pass from the interesting Concrete to Abstract

generalities, yet it takes pleasure in (1) *experiencing the Shock of Agreement in Diversity*, *i.e.*, perceiving similarities between different things where they were not expected, and (2) *Tracing Cause and Effect.*

(5) *An example, or model, or instance*, helps in forming a General Notion. The number required depends on the nature of the Notion.

(6) *Definition and Naming* also aid in holding the Notion. Connected with the *circle* we have co-operating (*a*) *Examples*, (*b*) *The Name*, (*c*) *The Definition.*

Common Sense must decide how far Concrete Examples will be wanted. With advanced pupils they are rarely needed (in Mathematics, for instance, they are not wanted; definitions are enough; it would be waste of time at this stage to dwell upon particular examples of triangle, square, polygon, circle, sphere).

Faculty unfolds or is developed gradually. **Sound Education helps the natural process of unfolding**; educational plans and methods should harmonize with natural development.

With the wheat-plant there is "first the blade, then the ear, after that the full corn in the ear." These stages are distinct enough when regarded singly, and at intervals; yet they pass into one another so gradually, that no boundary line or definite time of change can be assigned.

So is it with human Faculty. *Certain forms are most pronounced at their own periods*; there are recognizable stages. Yet *every Faculty grows slowly, gradually, and imperceptibly*; there are *no sudden accessions of power*, but an *orderly, steady, progressive development.*

The school ought not to be made into an intellectual or moral hothouse.*

Children, like plants, may be so forced as to get a show of flowers and fruit out of the normal season. This is not "perfecting nature." Earnest teachers, and otherwise good schools, are likely to go wrong here, specially under the modern demand for rapid progress.

Beginning with the very young child, good Education proceeds ever according to present need and present power in the learner. Every stage seems a *natural consequent* of what precedes it, and a *natural antecedent* to what follows it. Each step prepares the way for the next, and follows easily from the foregoing. There are no chasms, or breaks, or great leaps, but a consistent regular progress towards the goal.

Comte held that there should be *decided breaks*, *or complete*

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* See Dunn, *Prin. of Teaching.*

changes in the plan of Education, at what he regarded *as well-marked periods* of life.

(1) *Up to about seven years of age* brain-growth is extremely rapid. During this period, Education should be left to the mother; the Senses and Feelings, Observation, and Morals should be tended carefully, but little or no formal Education should be attempted; even Reading and Writing should not be taught. (*N.B.* Infant schools aim at exercising the Faculties Comte mentions; whether they are wise or not in attempting to *teach* as they do is a point for debate.)

(2) A second natural stage is *from about seven to fourteen*, during which brain-growth is considerable, though slower. This is the proper elementary-school period, when formal Education begins; it is the period for laying up that store of general acquirement which is useful to all alike. Comte does not give any special rules or directions about the subjects to be dealt with, or the mode and order of dealing with them.

(3) The third period covers *from about fourteen to twenty-one* years of age, during which brain growth is much slower. Technical and scientific Education form the proper course for this stage.

6. **Faculty is most amenable to treatment during its earlier stages**;—it is most plastic and "retentive during its early evolution."

Comparatively few Faculties are active at first, and the whole energy is concentrated on them. When other Faculties operate—and Mind finds many ways of acting—the force of each Faculty seems diluted. In later life, a general blunting of susceptibilities sets in, unless they are kept sharp by exercise. *Early impressions are most lasting;* the reason is partly seen, at least from the foregoing facts.

Early training has a lifelong directive force. "As the twig is bent, the tree is inclined." Whence the value of *the mother's influence* in the tone she gives to the home, the practice she inculcates and exemplifies, and the general atmosphere with which she surrounds the young life. The *teacher* comes a long way behind, but he too has his place and power.

7. Child nature is many-sided. **Every influence is** therefore **likely to produce complex effects.**

In acting upon one side or phase of child-nature, other sides or phases are influenced too. The *bodily pain* of corporal punishment may stimulate *mental activity*, and secure *right conduct;* this, if continued, becomes *habitual*, and habit ultimately forms *character*. So far-reaching may a single disciplinary act be, even if its ultimate effects are not noticeable.

Careless, ill-executed drill is of little value as a *Physical* exercise; it is even worse on the *Intellectual* side, as it makes no demand; its *Moral* influence is worst of all, being positively bad, because Duty is ill-done.

Indirect, unexpected, unworked-for, unlooked-for results may be more important than those aimed at.

The *mental training* involved in learning a subject *may be more valuable than the knowledge gained.* The actual knowlege which a boy acquires in mastering Euclid i. 5, or iv. 10, is but little, and might be obtained more easily. But his reasoning power, and his power of connected thinking is exercised by going through the chain of thought; he gets valuable mental training rather than a direct increase to his mental store.

One may do harm in some directions whilst seeking to do good in others; the net result of well-meant effort may be harmful rather than beneficial. Men have contracted a life-long dislike for religious exercises, for example, through being obliged to be present at tedious and incomprehensible family or public worship when young.

Inquisitiveness, if *unduly encouraged,* as it often is by well-meaning friends, begets "Spurious Curiosity," and magnifies the child's selfish importance. *Undue repression,* which often springs from a desire to do the child good, may generate a sense of unfair treatment, and produce moroseness and ill-will; or it may give the idea that we are ill-tempered, or that it is wrong to ask questions.

Warning and correction, though well-meant, may wound the child's susceptibilities, and produce in him the feeling that one has been cruel. Serious evils may follow;—dislike, intolerance of advice, and possible antagonistic or even defiant action.

8. Every experience, all the surroundings, **the "total environment" is educative.**

Innumerable influences are at work, each producing its own results. Not only do *formal* educative agencies act (schools, colleges, universities, gymnasia, Sunday-schools, churches), but *informal* and often unnoticed influences are at work, *whose collective force and constant incitements put them in the leading place.* Natural promptings to play and movement, observation and reflection, a neat tidy home or its opposite, the neighbourhood and its peculiarities, the character, acts, habits, and conversation of parents, friends, and associates, are influences of this informal or secondary kind.

Of bad surroundings, some are *negative,* such as the absence of religious observances, and of ennobling influences generally. Others are *positively bad,* such as impure language and life, or the presence of rank evils and

sins. Children reared in a bad moral atmosphere develop ill; any good influences they meet with elsewhere are outweighed by the persistent iniquity about them.

The broad twofold application is obvious. (1) *Provide good surroundings, examples, influences, and practice.* (2) *Get rid of,* and if possible, *prevent those of a contrary nature.*

Our powerlessness to do all this is painfully evident. The teacher is but one influence in Education, and that not the most powerful one either. What we may strive for is:—

(*a*) *See that school surroundings, formal and informal, tell in a good direction.* Detailed applications of this are as multifarious as the varying circumstances and conditions of our schools. In forming and maintaining an atmosphere of good influence, we must look to *physical conditions*, cleanliness, temperature, ventilation, light, &c.—*intellectual* influences, order, pleased interest, and real work—*moral* surroundings, the teacher's example, constant presence of a standard of duty, with an equally constant attempt to reach it.

(*b*) *Obviate or remove evil influences;* leave only such as are good, prevent ill-action.

(*c*) *Keep up a constant fight against evils.* Remember the tendency to accept existing conditions, and guard against being diverted from a high course. An incessant manly struggle for something higher and better, when recognized, endows a teacher with grand influence over his pupils.

9. Formal **educative agencies** and methods **are commonly directed**, at any one time, *to* **acting on one side of the nature**, one set of Faculties, or even one department of a single Faculty.

The *gymnasium* provides for general *Physical* development; it has also its special exercises for the arms, legs, back, &c. The *day-school* aims at a degree of general *Intellectual* development; but different subjects are used to exercise different forms of Mind power. The *Sunday-school* has *Moral and Religious* training for its main function; its separate lessons and exercises deal, for the time, with one or more aspects of this side of Education.

But *perfect educative action on one set of Faculties is never hurtful to the rest. Sound Method*, even when directed to one side only, *has a good all-round influence;* it favours harmonious development, and thus makes for the great end of Education.

Knowing, Feeling, and Willing, the constituents of Mind, are all involved in every Mental act.

But the Physical, Intellectual, and Moral Faculties act together. Good *Intellectual* teaching has a good *Moral* influence, for it secures concentration of force on immediate Duty, and makes it a source of gratification and pleasure. Within limits, its *Physical* effect is also good, for it promotes happiness, and "Happiness is the best tonic." Temper (*Moral*) and health (*Physical*) are thus improved by pleasurable *Intellectual* action." *

Doing anything well, whether it be playing a game, studying a lesson, or consciously restraining an evil propensity, *is a threefold training.* One great group of Faculty gets direct exercise and advantage; the others obtain a secondary and lower, but yet real benefit. *See, therefore, that everything is well done.*

10. **Nature's prompting to action.** Faculty acts spontaneously. Nature, in bestowing Faculty, has given a prompting to use it. *Activity is pleasurable.* Nature gives "an appetite for labour, a desire to know." †

Play in young animals; bodily restlessness, and mental activity and curiosity in children are natural.

Potentialities for good and evil are connected with this Principle.

Activity may take the direction of *diligent application* on one hand, or of *mischief* on the other.

Good teaching promotes happiness, because it employs the activities.

The pleasure is real, though seldom demonstrative. Children *like* good work, and commonly wish for more; sometimes they even continue it of themselves.

Recognize the natural law, and co-operate with the child: *direct, rather than thwart the action of his faculties.* To prevent action, or to repress it beyond a certain point, is to run counter to child-nature.

Take the lead, but see that the *child* acts as you desire. Supply material, or put him in the way to find it, then *set his faculties to work* upon it, and keep up the action on proper lines. *Stir up,* and make the most of *the natural desire for learning.*

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* See Spencer, *Education, etc.*

† See Laurie's *Comenius.*

The greater the number of Faculties employed, the greater is the *Pleasure*, and the greater the likelihood of *Acquisition*.

If exercising one Faculty gives Pleasure, the gratification increases with the number of Faculties employed. The larger the number of Faculties which act, the greater the possible number of associations that are formed, and the likelihood of retaining and recalling the associated details.

11. There is a limit to the action of the fact or Principle just stated. **Natural promptings can only be relied on up to a certain point**; *when this is reached, they need reinforcing.*

Left to itself, natural Faculty does not exert its full force; *extra motive has to be supplied* to bring about the desired action.

Natural promptings often urge *action on improper lines.* Sometimes the educator has to oppose them directly; a better plan, where it can be used, is to divert or direct misapplied tendencies into desirable channels.

Beyond a certain point activity ceases to be pleasurable. This stage is soon reached with those unused to school, or when the activity is severe; it comes on as certainly when the activity is monotonous.

Rational Education secures the child's co-operation, utilizes his native promptings, systematizes the process which is initiated by the tendency to employ his faculties, superadds reinforcing motives where they are wanted, checks the activities when they would pass into wrong channels, and brings them back to the right. The acme of educative skill is reached, when Nature is thus "perfected."

12. **Food, Exercise, and Rest are essential** to the growth of all forms of Faculty.

To keep the *Body* in health, the tissues must be nourished, the limbs set to work within the limit of fatigue, and then be allowed to recruit themselves by rest.

Mind Faculty must have material to act upon; this it is the teacher's first duty to provide. Then, as Knowledge "becomes part of the organic life of the Mind," or is assimilated only by exercising Mind upon this material, a second part of the teacher's business is to exercise Faculty. After a time, the stock of mental force is exhausted; fatigue sets in; rest is needed for force to re-accumulate.

The *Moral* Faculty needs its food too; it must have Instruction as well as Training. Precept and example supply the food; Right-doing is the appropriate exercise. Moral lessons may easily become tedious, and should never be very long.

Food suited to each form of Faculty *must be supplied*, or Faculty will be starved.

Surfeit, however, is possible; too much may be offered or taken.

Power collects and recruits itself by Rest.

Reasonable restraint conserves power. Do not allow the store of energy to expend itself too soon; try to distribute it over the school-hours. With all your endeavour, the greatest part will escape early.

Exercise is enjoyable so long as freshness lasts.

The best work of the day is done soon after school meets; freshness of Mind favours concentration. On the physical side, note the exuberant energy of pent-up force, when children are let out of school. After a certain point is reached, however, exercise ceases to give pleasure, and then becomes fatiguing.

13. *Faculty is developed by* **Action**; Power grows by being used; *judicious* **Exercise** *is the leading condition of growth.* **Doing** *is indispensable to proper* **Knowing**.

We learn how to do a thing by **doing** *it.*

Walking, talking, swimming, playing the piano, reading, writing, thinking, teaching, and all other actions are essentially matters of *practice*. We learn to walk by walking, or by trying to walk; and so with all the rest.

We can *gauge our progress by the increased facility* with which we can *do* what once was difficult.

This is what we mean by "getting on."

Exercise, if well-directed, may produce astonishing results.

Savages acquire marvellous skill in hunting, tracking, &c., by constant exercise of their sense-organs. Musicians, artists, and specialists of all kinds, owe their manipulative skill to long practice, and the rule holds for us all.

"**Provide suitable Exercise**" is in effect a summary of Educational rules.

Each word, as well as the whole sentence, is full of meaning. The necessity for "**exercise**" has just been exemplified and urged. "**Suitable exercise**" is exercise adapted to the teacher's purposes, and the pupil's capacities and needs—its *nature* or quality, its *amount* or degree, and its *direction* or mode of application, have to be considered here. "**Provide suitable exercise,**" means, for us, devise proper forms of work for

Faculty; make school subjects and school exercises yield active training for the various powers.

Many maxims or educational aphorisms might be connected with this principle. Some of these are:—

Practice makes perfect.

Doing is better than knowing; train to *do*, rather than to *know*.

Use is second Nature.

"*Use legs and have legs.*"*

Cause the learner to do what you wish him to do. "As a general principle, whatever a child refuses or neglects to do, he should be obliged to do. We cannot lecture a child into good manners or change of habits. The Physical, Intellectual, and Moral habit is only changed by a succession, or, rather, a repetition of doings." †

Exercise Faculty according to its strength.

Good training consists in *arousing, maintaining, and directing the pupil's action*, and in getting him to *use his own activities* in the most profitable way.

"*It is only practice that improves our Minds as well as our bodies*, and we must expect nothing from our Understandings, any further than they are perfected by habits." ‡

14. **Learning is self-teaching.** Only so far as the pupil acts of and for himself is he being educated, and *only so far as the teacher secures this action or doing, does he really educate.*

In reality, one can obtain no knowledge, and can acquire no habit, except of his own act. Not only is *self-gained knowledge more enduring*, but working for ourselves, independent observation and thought, is the only way to *reach the higher levels* of Intellectual strength and aptitude.

A child learns more, and is educated better, by what costs him some pains, and by what he discovers for himself, than from what he receives ready-made.

"Obliged to learn by himself, the pupil makes use of his own Reason. From the continual exercise of his own Understanding will result a vigour of Mind, like that which we give the body by labour and fatigue." "I preach to you a difficult art, viz., to govern without precepts, and *to do everything by doing nothing*." §

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* Locke, *Concerning Human Understanding*, sect. xxxix.

† Stow, *Training System*.

‡ Locke, *Concerning Human Understanding*, sect. vi.

§ Rousseau, *Emile*.

To leave the matter here, however, would be to ignore one side of the subject.

Of the two attitudes which a pupil assumes under good teaching, *the actively acquisitive and reproductive is more reliable than the passively receptive.* The teacher shows his skill when he awakens a desire to learn and to know. But when the desire is there, he may satisfy it either (1) by *putting the pupil on the road to discover* for himself, or (2) by at once presenting the result, and *telling* the pupil. Both forms ultimately make a demand on the pupil's striving; both enter into true teaching.

Those who advocate "No telling," and "No explanations," often do so as a protest against the abuse of words in teaching, and as a means of urging that *Ideas* should come before words. Even Bacon maintains the necessity for simple receptivity at times: "It behoves the learner to take upon trust."

Maxims connected with this principle are:—

Easy come, easy go; what costs no trouble is not valued, but store is set by that which costs effort.

"The primary principle of Education is *the determination of the pupil to self-activity.*" *

It is *what the pupil does* that educates him.

Unless and until we *get the learner to work*, we practically do nothing.

The teacher's part is to *cause the pupil to learn.*

Test your teaching by what you get out of your pupils, noting its *amount*, its *quality*, and how much of it represents *their own* higher effort.

Other notabilia associated with self-teaching, adapted from Payne,† who assumes that a child is left to himself:—

(1) *The learner would begin with objects*, with the tangible and concrete, with Observation, or exercise of the Senses (Sense-Perception), *with facts, not Principles.* Judgment and advanced Faculty would come into use later on.

(2) He would *begin with Analysis, and pass on to Synthesis* and construction afterwards.

(3) In exploring, discovering, and exercising his Faculties for himself, *he gains Power, and finds Pleasure.*

(4) *He proceeds according to his strength*, from known to unknown; each piece of knowledge gained is built into its place.

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* Hamilton.

† See *Practice and Art of Education.*

(5) *Thought, Reasoning is employed;* facts and ideas are connected logically.

(6) *Knowledge,* thus gained, *is a sound basis for further acquirement.*

(7) Such *knowledge* as is possessed *is clearly and firmly held,*—it is truly known.

(8) He gains power to help himself; *self-helpfulness is developed.*

Note. Good Teaching, or rather Education, will have these aims, and will help the natural processes here indicated.

15. The chief circumstances affecting the development of Faculty are (1) *Original Endowment,* (2) *Educative Influences,* (3) *Nature's boundaries,* with which (4) *Heredity* is now usually associated.

1. **Original Constitution, Native degree and quality of Faculty, Individuality.** The same teachings and educative influences produce different results on different people, because of differences in their natural endowment.

Children from the same family, or school, or Sunday class, do not grow up alike; the soil differs; crops of the same quality cannot come even from the same husbandry.

Collective teaching, which appeals to common sentiment, attainment, and power, has to be supplemented by *individual* exercise. *Peculiarities* of temperament, disposition, and character have to be studied and met. *Retentiveness* varies; this produces or accounts for numberless differences amongst children trained alike.

Intellectual "**Dispositions**" depend on the relative strength or predominance of one form or other of Intellectual Faculty,—*Feeling, Will, Thought.*

(*a*) Where *Feeling* is prominent, we have the **Emotional or Sensitive Disposition**, very susceptible, and readily affected by Pity, Love, Regard, Fear, and their cognates. Children of this character can usually be led with ease, and can be strongly moved, but are often unstable. As a rule, children are very impressionable. With the growth of higher Intellect, mere Emotion loses much of its strength.

N.B. There is *a kind of natural antagonism* or antithesis *between the Emotional and the Intellectual Dispositions,* between "Heart and Head," Feeling and Thinking. Not only is one side usually developed more than the other, but *the active state of one is synchronous with the passive state of the other.* Strong Feeling prevents Intellectual work; Emotion has to be toned down as a preliminary to study.

(*b*) The **Active Disposition** accompanies strong Will, and, often, a

vigorous physique; the vigorous volitional promptings of its possessor render him active; strength of Will makes him determined. This Disposition manifests itself variously, *Impulsiveness*, *headstrong determination*, and *dogged stubbornness* are common forms.

(*c*) The **Inquisitive Disposition** is moved by a desire to *know*. Children of this character like learning, and are apt at acquirement; they are the clever boys and girls who pick up knowledge readily. Curiosity is easily aroused and maintained in them; there is little difficulty in getting them to think.

General Temperament varies also.*

The *Nervous* temperament is studious and excitable; little urging is wanted to keep its possessor up to the mark. Here the teacher's aim should rather be to repress excitement, and procure calm, steady work. Bodily exercise and open-air life should be encouraged.

The *Sanguine* temperament is active and restless, and likely to be troublesome accordingly. A good general plan is to get muscular energy expended during recess and play-time; mental application then becomes easy for a while. Steadiness has to be cultivated with more than ordinary care.

Bilious temperaments are enduring; they have stamina, and are capable of sustained action.

The *Lymphatic* temperament is slow and heavy. Nutritious food in moderation, and plenty of out-door exercise are desirable.

N.B. Temperament is never absolutely confined to any one of these forms.

2. Mode of dealing with Faculty, Education. "Of all the men we meet with, nine parts out of ten are what they are, good or evil, useful or not, by their Education." †

This book has tried to show how Faculty should be dealt with, and to give reasons for the treatment it recommends.

Note in connection with Locke's statement, that both *formal and informal agencies* have to be considered.

Observe also, that *judicious Exercise* (including plenty of *Repetition*) *is the inclusive requirement* in practical Education. To produce the best effect, however, there must also be *healthy freshness* of body and mind, *interest* in the work, *mental quietude* (absence of distractions and opposing influences), and *time* for the exercise to have its full effect.

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* See Jolly's *Combe.*

† Locke, *Thoughts on Education.*

3. There are **limits to growth**; our powers are curtailed; *Nature has set a boundary for each one* which he cannot pass.

Where this boundary line is, we cannot say; but that such a limit does *practically* exist, is undoubted. All possible training would never make some of us able to lift three hundredweights, or run a mile in six minutes, or play Beethoven's sonatas well, or deal readily with analytical Geometry. Education, study, and practice can develop what is capable of development in us, but not more.

"*Education can improve Nature, but not completely change it.*" * It can neither bestow nor eradicate Faculty; it can only *awaken* what lies dormant, and *develop* or *repress* what is already there. Nature bestows Faculty, Education unfolds it.

Faculty acts from within; Education acts on Faculty from without. *Natural frailty* in the pupil, as well as *shortsightedness*, *imperfect knowledge*, and *lack of power* in the teacher, make it impossible for either to do the absolute best, and keep the learner from reaching such a boundary line as would else be possible.

4. **Heredity and Evolution.**—*Ancestral peculiarities and experiences affect the descendants.*

Families and races preserve ancestral *features* and characteristics. Longevity, delicacy, or strength of constitution, tendency to special forms of disease, "*Peculiarities of Mind, Temper, Thought, Habit, and Volition*" characterize members of the same stock.

The present marked differences between nations have been brought about "by the action of modifying circumstances upon successive generations, who severally transmitted the accumulated effects to their descendants." The differences have now become "organic, so that a French child grows into a French man, even when brought up amongst strangers." †

Acquired powers and habits are thus transmitted from generation to generation; we have an inheritance derived in part from the *experience* of our forefathers—this we have, anterior to experience of our own, though it often remains latent until something demonstrates its presence.

Some maintain that not only general character, but technical skill and aptitude for particular walks of life or forms of Mind work, depend greatly on heredity. *Others deny that the Principle has any practical import*, because of the numerous marked exceptions to it. Assuming the

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* Attributed to Aristotle.

† See Spencer, *Education, etc.*

existence of inherited special power and tendency, the comparative ease with which some children learn, or are amenable to higher forms of moral suasion, is explainable.

If the doctrine be true, the race as a whole is undergoing a process of gradual change, as each generation inherits the experiences, or the results of the experiences, of those which have preceded it.

16. Tendencies of Modern Educational Thought and Practice;* things aimed at more or less steadily.

The animal part of the nature *receives more care.* It is seen that *body and Mind* must be cared for; the *whole being* should be developed.

Rote learning, and Memory work pure and simple, is going out of fashion. It is seen that some "learning by heart" is not learning at all. Comprehension, intelligent grasp of the meaning, is now aimed at.

Examples and particulars are taken *before Generalizations; Principles also are taught rather than Rules.* Rules give empirical knowledge only; Principles are applicable in all cases. Principles and Generalizations, however, to be lasting and to serve their best purposes, must be worked for, and perhaps discovered by the learner.

Abstract studies are postponed to a later period; abstractions are not forced on before the Mind has been familiarized with the facts on which they are based.

The Perceptive Faculties are systematically cultivated; the importance of accurate Observation, and vivid Sense-impression is acknowledged. Object-lessons are extensively used.

The Concrete has become prominent as the Abstract has receded. This appears especially in Objective Illustration, which is now employed extensively in lessons on Number, Tables, Arithmetic, Geography, and in illustration generally.

Attempts to make acquirement pleasant are the rule. Everything is done with closer reference to child-nature and to child-liking. Method is tested more and more by its *tendency to promote Happiness.*

Greater attention is paid to the training of the hand and eye, by the addition of Drawing, Varied Occupations, Wood-working, Clay-modelling, Metal-working, &c., to the Curriculum of Elementary Schools.

17. "Guiding Principles" for Intellectual Education, specified by Spencer.

1. Education should proceed *from Simple to Complex.*

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* See Spencer, *Education, &c.*, pp. 59—65, ed. 1861.

Simple at first, to correspond with the few Faculties which are active, subjects will be added as fresh powers come into play. Proceed from single to combined; begin with few subjects, add others successively, provide every Faculty with appropriate work, and secure the simultaneous action of all.

2. Mental development proceeds *from the vague and indefinite to the clearly perceived and definite.*

First ideas are never precise; the power of distinct and minute Discrimination results from training or practice. Teachers often allow themselves to be deceived when children can repeat rules verbatim, although a little testing would reveal the fact that the child attaches only a hazy meaning to the words.

In Education, *crude notions must come first;* these are gradually made clear, definite and correct, by removing erroneous notions one by one, and fixing what is correct by repetition.

3. Lessons should proceed *from Concrete to Abstract, Example to Principle, Particular to General.*

This is in part a repetition of the foregoing Principles. Misunderstanding as to "Simplicity" is frequent. Concise Generalizations are simple in form, and in comparison with the whole multitude of separate truths they comprehend; but in reality they are more complex than any of the single facts they embody. *Individual facts are more simple than Generalizations.* To set out with "first principles" is really, though not apparently, to violate or invest the primary rule. [As Ferrier puts it, "*First principles come out last.*"]

4. *Child Education should proceed according to the order and mode in which Faculty has been, and is developed in the human race.*

The great human Mind has unfolded, and has gained its knowledge in a certain way and order, which way and order have been and are most suited to it in the main. Education of the individual should follow the same broad system. If there be an order in which the human race has mastered its various kinds of knowledge, there will arise in every child an aptitude to acquire these kinds of knowledge in the same order. It would facilitate Education to lead the individual Mind through the steps traversed by the General Mind. Education should be a repetition of civilization in little. An enquiry into the method of civilization will help to guide us."

5. Procedure in every branch should be *from empirical to rational.*

This is one conclusion deducible from the foregoing principle, as well as from that which precedes it. Science comes after Art, organized and generalized knowledge after practice, experiment, observation, and accumulation of facts.

The two general Principles which Spencer holds to be the most important, but at the same time the least attended to, are the following :—

6. *Self-culture ought to be encouraged.*

This is a second corollary from (4). As with "self-made men," what is learned of and for ourselves is learned best. *If teachers would offer knowledge of the right kind at the proper time, the pupils could, and generally would, help themselves.* "The need for perpetual telling results from our stupidity, not from the child's. Having by our method induced helplessness, we make helplessness a reason for our method." *Tell* as little as possible, induce children to *discover* as much as possible.

Spencer enumerates certain advantages connected with making Education a process of Self-culture.

(*a*) It *keeps lessons in* the right, *i.e.*, the *natural order.*

(*b*) *Impressions* thus gained *are more vivid and permanent.* Mental activity and excitement, and the pleasure of victory, conspire to strengthen the impression.

(*c*) *Outside aid is more valuable* after difficulty has been experienced. Striving prepares the way for surer receptivity.

(*d*) *Knowledge is organized;* each new fact is integrated with the whole. Knowledge becomes power, and aids further progress.

(*e*) *Moral training is provided;* self-help, courage, perseverance, and patient concentration are exercised.

7. *Education should be pleasurable;* children should *enjoy* it; *happy activity* should be called forth.

Unless *interest* be excited, method is wrong. Healthful action is pleasurable: painful action is not healthful. With good management, the pleasure connected with helpful activity is a sufficient stimulus for school purposes.

Here, also, Spencer enumerates specific advantages.

(*a*) The Principle *keeps the teacher from hindering natural development.*

(*b*) *Child-happiness itself is worth working for.*

(*c*) Happiness in work, or *enjoyment* of it, *makes work more effective* than indifference or disgust.

(*d*) Pleasure in work *delivers* the pupil *from the paralysing dread of the consequences of* shortcoming, and thus indirectly favours concentration.

(*e*) The *Moral influence is good*, on manner, temper, disposition, and then on health.

(*f*) The *teacher's influence is greatly strengthened;* it becomes friendly, benign, and powerful.

(*g*) A *habit of self-culture* is likely to be formed.

THE MIND, AND INTELLECTUAL EDUCATION.

Intellectual Education is concerned with storing the Memory, and with the general training and development of the mental powers.

It is the branch which, by common consent, is regarded as the peculiar duty of the school, and which school arrangements are intended to provide for.

Mind is that which **feels**, **thinks**, and **wills**. Mind can be known only by its manifestations. This complete enumeration of the powers of Mind stands for a definition.

Every form of mental action may be classed under (1) *Feeling*, capacity for pleasure and pain; (2) *Thought*, cognition, the faculties of knowledge; (3) *Volition*, conation, the phenomena of desiring or willing.*

Mind is often contrasted with matter. Every substance, or material thing, occupies space, it has size or extension. Mind is immaterial and *unextended.* †

We, however, often speak of Mind as though it were something tangible, and capable of being impressed or moulded like wax or other plastic substance. Thus we say, "An impression was made on his mind," "Every mental experience leaves its trace," and so on. All such forms are convenient analogies rather than expressions of actual fact.

I. **The Intellect**, or *thinking* power of Mind—*Cognition*—is sometimes regarded as a **group of faculties.**

Hamilton treats of "*six special faculties of Cognition*," and maintains that whilst these are distinct, and not resolvable into one another, the

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* See Bain, *Mental and Moral Science*, page 2, and Appendix D. Also Hamilton, *Metaphysics*, I., pages 122, 157.

† See Bain, *Senses and Intellect*, pages 1, 2.

other faculties enumerated by philosophers can, so far as they exist, be included amongst those he gives.

Hamilton's arrangement of the phenomena of Mind is as follows:—

Mental Phenomena.

- (A) **Cognitive Faculties.**
  - (1) **Presentative** Perceptive, Acquisitive, Receptive Faculty.
    - (a) *External Perception;* Sense-Perception; Objective Perception; concerned with the phenomena of matter—the "non-ego."
    - (b) Internal Perception; *Self-consciousness;* Subjective consciousness concerned with the phenomena of Mind proper—the "ego."
  - (2) **Conservative** Faculty—*Memory;* simple retention.
  - (3) **Reproductive** Faculty.
    - (a) *Suggestion* (involuntary or spontaneous).
    - (b) *Reminiscence* (with aid of Will).
    - Both *a* and *b* depend on Laws of *Association.*
  - (4) **Representative** Faculty—*Imagination*—"*Conception*" and *Fancy.*
  - (5) **Elaborative** Faculty—*Comparison—Conception, Judgment, Reasoning;* the "Faculty of Relations."
  - (6) **Regulative** Faculty — *Common-sense;* Reason, the faculty of à priori truths.
- (B) **Feelings**, including Pleasures and Pains.
- (C) **Conative** Powers, the Exertive powers, Will, and Desire.

The *Acquisitive, Receptive, or Presentative faculty* is the means by which we obtain all our *acquired* knowledge. It has two departments, one concerned with the *external or object* world, the other with the *internal or subject world;* from both we obtain facts or materials of knowledge. (**Forming Ideas.**—*Perception, Apprehension,* "*Seeing,*" *Understanding.*)

Materials collected or obtained by the Acquisitive faculty are stored or kept by *Memory*, the *Conservative* faculty. They may then be brought forth from their storehouse by the *Reproductive* faculty, sometimes without any effort on our part, at other times in obedience to a mandate from the Will, but always in accordance with the "Laws of Mental Association." (**Memory**, including **Remembering** and **Recollecting Ideas.**)

We have a further power, the *Representative* faculty, of making these re-collected pieces of knowledge into objects of thought. ("**Conception,**" a term, however, which Hamilton thinks unfortunate.) * Then there is the higher power of *Thought proper*, to which all the other faculties are subservient, and which *elaborates* these materials variously by synthesis

* See Hamilton, *Metaphysics*, II., page 261.

and analysis, generalization and abstraction, judgment and reasoning. (**Thinking, subsequent dealing with Ideas.**) *

II. Bain agrees with Hamilton in the three-fold division of Mind, but holds that there are **three** *fundamental and distinct* **functions of Intellect,** and no more.

In his view, all the commonly enumerated faculties are reducible to forms of action of these three functions.

"Fewer would not explain the facts, more are unnecessary." †

These three are :—

(1) *Consciousness of Difference, Discrimination*, the power of distinguishing and perceiving separate things, facts, and mental states. By it we obtain the individual elements of our knowledge.

(2) *Consciousness of Agreement, Similarity*, the power of *identifying* and perceiving likenesses or *resemblances in different things*, facts, and mental states. These can then be bound together in virtue of their resemblance.

(3) *Retentiveness, Memory*, which has two leading attributes, (*a*) *Persistence*, Retention, Remembering, and (*b*) *Power of Recovery* or Recall, Recollecting. Retentiveness in both its aspects depends upon the energy with which Discrimination and Agreement act, *i.e.*, upon the clearness with which separate things are perceived, and largely on the perceived similarity underlying each group of ideas.

If this arrangement be allowed, Hamilton's "faculties" would be dealt with as follows :—

Perception would be only another name for *Discrimination*. The Conservative and Reproductive faculties are different aspects of Memory or *Retentiveness*. "Imagination is a product of *all the three* fundamentals of our intelligence." Conception, Abstraction, Generalization, Classification are performed by the Elaborative faculty, which is mainly an application of *Similarity*. Judgment may be an exercise of *Discrimination*, or it may consist in the perception of *Agreement*. ‡

Bain and certain other psychologists dispute the existence of a primary "Common-sense" and Regulative faculty, by which we are supposed to derive our "instinctive" notions about necessary truths, space, time, causation, and right and wrong. ‡

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* See Hamilton, *Metaphysics*, II., Lectures XX. and XXI.

† *Mind and Body*, page 83.

‡ See Bain, *Senses and Intellect*, page 325.

The following table exhibits **Bain's classification** of mental phenomena.

Mental Phenomena.

- A. **Feeling**
  - (1) **Sensation.** *Primary Feeling.*
    - (*a*) *Muscular Feelings.* (Feelings accompanying muscular contraction, as in lifting a weight, pressing on a hard resisting surface, &c.)
    - (*b*) *Sensation proper.*
      - *Organic Feelings.* (Hunger, Cramp, Nausea, &c.)
      - *Special Senses.* (Sight, Smell, &c.)
  - (2) **Emotion,** *derived Feeling.* (Love, Fear, &c.)
- B. **Will**: *Volition.*
- C. **Thought** *Intellect proper*
  - (1) **Discrimination,** *i.e.,* consciousness of *Difference.*
  - (2) **Agreement,** *i.e.,* consciousness of *Similarity.*
  - (3) **Retentiveness**
    - (*a*) *Persistence* or *Retention* proper, Remembering.
    - (*b*) *Power of Recovery* or *Recollection.*

(Sections 1 and 2, chapter XX., Book II., Locke's *Essay concerning Human Understanding*, may be read with advantage here.)

Mind has *no independent organs or parts.*

We sometimes speak of various forms of mental power and action, as though they were connected with, or originated in, parts of the Mind distinguishable from one another. We then seem to regard Mind as having specialized organs like the body, each discharging its peculiar function.

But *these distinctions are logical* or formal, *rather than actual.* There is no part or organ in Mind which does nothing but *feel;* nor is there any part devoted to pure *Intellect* only, or to *Will;* neither is there any specialized faculty for perceiving, or remembering, or reasoning. *The Mind* (as a whole) *feels, thinks, and wills.*

Mental phenomena are rarely, if ever, independent of one another. It is, perhaps, impossible to find any power acting entirely alone. *

If one of our more elementary acts be examined, it will be found to involve all the functions of the Mind. Suppose we perceive that *snow is white.* In this we have (1) *Discrimination,* the perception of difference; snow is mentally separated from all other things, or is seen to be something distinct. (2) *Similarity,* consciousness of agreement; although snow

* See Bain, *Mental and Moral Science,* Appendix E.

differs from things which are not snow, yet we recognize that it resembles some of them in one particular, whiteness. *Comparison* and *contrast*, examining snow with other things—*judgment*, pronouncing on their agreement or difference—*abstraction*, fixing attention on one property (whiteness), to the exclusion of all others—*classification* and *generalization*, referring snow to the general group of white things, are all employed. (3) *Retentiveness*, Memory for other cases of whiteness, or for other white things, is involved throughout.

The phenomena of Mind "may stand separated from one another in books; in nature they are ever interwoven. *In every, the simplest, modification of Mind—Knowledge, Feeling, and Desire or Will go to constitute the mental state; and it is only by a scientific abstraction that we are able to analyse the state into elements*, which never really exist but in mutual combination." "There is no state in which all the elements are not coexistent." *

"Man is sometimes in a predominant state of *Intelligence*, sometimes of *Feeling*, sometimes of Action and *Determination*. To call these, however, separate faculties, is altogether beside the mark. No act of Intelligence can be performed without the Will, no act of Determination without the Intellect, and no act either of one or the other without some amount of Feeling being mingled in the process. Thus, while *they each have their own distinctive characteristics, yet there is a perfect unity at the root*." †

"Feeling, Thought, and Will are 'a trinity in unity'; they are characteristic in their several manifestations, yet so dependent among themselves, that no one could subsist alone; neither Will nor Intellect could be present in the absence of Feeling; and Feeling manifested in its completeness, carries with it the germs of the two others." ‡ "When we are pleased (*Feeling*) our *Will* is moved for the continuance of the pleasure; we at the same time *discriminate* (Discrimination, *Intellect*) and *identify* the pleasure (Similarity, *Intellect*), and have it impressed on the *Memory* (Retentiveness, *Intellect*)." §

Teachers should note amongst other things:—

(1) *Complexity of mental processes;* we need not therefore be surprised, and should not be annoyed, at the difficulty we experience in getting children to form ideas, and to think.

* Hamilton, *Metaphysics*, I., page 188.

† Morell, *Psychology*, page 61.

‡ Bain, *Mind and Body*, pages 43, 44.

§ Bain. *Mental and Moral Science*. page 2.

(2) *The whole mind needs to be moved to action.*

(3) It is possible as well as desirable to *secure the co-operation of the various intellectual functions;* therefore, it is our duty to lay plans, and then test and modify our schemes for achieving this purpose. Note especially the last quotation from Bain. *

(4) Students, who are likely to be bewildered by the apparent mixing together of phenomena connected with Feeling, Thought, and Will, in text-books on Mind, will see that such admixture cannot fairly be avoided.

Consciousness is a generic term, including all forms of recognisable mental action.

Perception, Recollection, Conception, and *all forms of mental life,* are forms of Consciousness. When Mind ceases to act, we become *unconscious,* and mentally dead for the time. *Psychology* has been termed the *philosophy of Consciousness.*

Consciousness implies a *change* from the former mental state.

Discrimination is the recognition or *perception* of this change. Consciousness thus involves Discrimination, and Discrimination involves Memory, Judgment, &c., (*see page* 464). Continued Consciousness implies continuous change; this again involves continuous exercise of Discrimination, &c.

N.B. (1) It may be the *teacher's duty to accentuate these changes,* to make them real, sharp, and decided.

(2) **Certain terms** † are frequently used in connection with consciousness.

(*a*) *Objective Consciousness.* When the Mind is conscious of an object *external* to itself, as of a tree, a picture, or a part of the body, such consciousness is *objective.*

(*b*) *Subjective Consciousness.* When the Mind is conscious of *its own internal states,* as in feeling angry, or timid, the consciousness is *subjective.*

(*c*) *Presentative Consciousness* is the term employed to denote the consciousness of an object, action, or state of Mind, *actually and now present* (*Perception*).

(*d*) *Representative Consciousness* is the consciousness of something previously existent in the Mind, but now *recalled by the intellectual forces* alone (Imagination, including "Conception" and Fancy).

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* Bain, *Mental and Moral Science*, page 2.

† See Bain, *Senses and Intellect*, page 324.

FEELING, SENSATION, EMOTION.

Feeling, the first great division of Mind, includes the *Sensations* and *Emotions*.

In this department are included *pleasure* and *pain*, as well as certain mental states (such as mild surprise) which are *neutral* as regards pleasure and pain.

Every feeling has **two aspects**; (1) on one side it is **emotional**, *i.e.*, a source of *pleasure* or *pain*, or *neutral* excitement; (2) on the other it is **intellectual**, *i.e.*, a source of *knowledge*, and involving *Thought*, or the exercise of Discrimination, Similarity, and Retentiveness.

There seems to be **an antithesis between the two aspects of Feeling**; if one be strong, the other is correspondingly weak.

The sense of *Taste*, for example, yields acutely pleasurable feelings, but there is comparatively little that is intellectual in them. On the other hand, *Sight* is highly intellectual; it affords plenty of scope for Discrimination and Similarity, whilst "visual memory" is a remarkable form of Retentiveness, yet Sight is not a usual source of acute pleasure or pain.

Hamilton enunciates the law by which the phenomena of Knowledge and Feeling are governed in their reciprocal action. "*Knowledge and Feeling—though always co-existent* [in every conscious state], *are always in the inverse ratio of each other.*"

The oft-quoted *antagonism between "head and heart"* may also be cited.

Sensation is the consciousness which results from the action of external agents on some part of the body which is "sensitive."

(1) "*The Muscular Sense*" includes feelings incident to muscular exertion, and dependent on contraction of muscle. The general *feeling* of exertion, or of *expended energy*, connected with bodily labour is a broad example.

(2) (*a*) *Organic Feelings, Common organic sensibility.* Many forms of Sensation are originated *in the body* itself; *e.g.*, fatigue, thirst, hunger, neuralgia, cramp, headache, pain from a hurt, &c.

(*b*) *Special Senses.* Vibrations from sonorous bodies, conveyed to the ear, excite the varied sensations of Hearing. The sensations of Sight

(light, colour, lustre) appear to be caused by waves of luminiferous ether impinging on the retina.

Every Sensation is a *characteristic form of Consciousness*, brought about by *peculiar exciting agents*, acting on a *part of the body* which receives impressions, and conveys them to the brain. (*It would be an instructive exercise for the student to make out and fill up a table of Sensations. Columns might be ruled for the three divisions as given in the text, and then for "Special organ," "Stimulus," "Examples of the Feeling," "Mode in which Agent (stimulus) acts." The last column will be difficult to deal with, but the others are easy.*)

The Mind *feels*, although we instinctively refer Sight to the eye, Hearing to the ear, Touch to some part of the bodily surface, and so on.

Probably the "sensory ganglia" at the base of the brain are concerned in interpreting afferent nerve impulses into Sensations.

Sensation and Perception. Agents external to the Mind stimulate it, and produce *impressions*. These impressions, if "felt," produce *Sensations*. Sensations when referred to their "causes," result in *Percepts*.

The "traces," or recollections of Percepts, are Elementary *Ideas*.

This paragraph will be exemplified further on (Perception).

The organs of sense are the gateways of Mind.

Acquirement depends primarily on Sight, Hearing, Touch, &c., and secondarily on subjecting the mental impressions so made, to various exercises of Intellect proper. *Get children, therefore, to use their eyes and other sense-organs well.* Teach or train them to *observe* accurately, (Discrimination), and then to think about what they see in higher ways.

"*There is nothing in the Mind which was not previously in the Senses.*" Whether this be accepted or not as a sufficient explanation of the sources of knowledge, it is a useful maxim for teachers.

The Emotions, as compared with Sensations, are secondary, or derived, or compound Feelings.

"The emotion of Wonder, for example, inspired by a human being of gigantic size, is the result of a comparison of the present impression on the sight with our recollected impressions of ordinary men and women." *

* Bain, *Emotions and Will*, page 35.

The Emotions are *growths*.

They may be cultivated, excited, directed, and restrained.

As *motives* they are of prime importance in securing right conduct and training the Will.

Other notes for teachers. Amongst many which might be brought forward, the following are particularized.

(1) *General influence of Feeling as a motive.* Pleasure moves us to such action as will preserve or augment the pleasure. Pain urges the Will to act for removing or mitigating the pain. *On this principle, Discipline and Moral training are based;* the good disciplinarian makes right conduct more pleasant than wrong-doing, or abstention from duty.

(2) *Memory for pleasure and pain is not alike in all.* Differences in conduct and in disposition are largely traceable to this fact.

(3) *Punitive school discipline* is mainly associated with organic sensations; *e.g.*, detention until muscular restraint becomes tedious, corporal punishment with painful sensations of the skin.

(4) *Manifestation of Feeling* by altered expression, tones, smiles, tears. Teachers have thus an index to their pupils' state of mind, and a means of encouraging, inviting, and controlling them by varying their expression.

(5) *Violent stimuli are undesirable.* Extreme pleasure or pain excites abnormal activity for the time, but this is invariably followed by corresponding depression. The functions of circulation, respiration, and digestion are interfered with by violent joy, much anxiety, or obtrusive pain. *Strong Feeling interferes with and prevents intellectual work* proper. The condition most favourable to mental work is when Feeling is quiet and unobtrusive. The mildly painful *discipline of restraint* comes in as a useful curb when the animal spirits are over-exuberant, and steadies the child, until he falls into the attitude favourable to receptiveness and continuous work. *Avoid extremes;* their immediate rough effectiveness is commonly paid for at too high a price.*

(6) *Pleasure is exhilarating, pain depressing.* "States of pleasure are concomitant with an increase, and states of pain with an abatement of some or all of the vital functions." † Teachers, therefore, should *make school a happy place*, and school work exhilarating, if they would get the best out of the children.

* See Bain, *Education as a Science*, page 21.

† Bain's "Law of Self-conservation," *Mental and Moral Science*, page 75.

Instincts, Appetites, Desires, are terms often used in connection with Feeling. They are sometimes classed as "active powers," and grouped with Habit and Will.

Instinct is "untaught ability to perform actions of all kinds, more especially such as are useful to the animal." Reflex actions, as in breathing and swallowing, starting at a noise, crying, are examples.

The Appetites are uneasy sensations or "cravings produced by the recurring wants and necessities of our body or organic life." They recur periodically. The appetite for sleep, food, exercise, and rest are examples. Some forms of appetite (*e.g.*, play after work) can be used in Discipline, and others (food, rest, recreation) have to be considered in regulating school work.

The Desires involve a previous experience of pleasure, the memory of which spurs us to seek its renewal or increase. Desire is an uneasy state. Examples occur in the sick man's desire for renewed health, the miser's for more money, and the ambitious man's desire for power. The desire to excel (Emulation), and the wish to learn (Curiosity), exemplify forms we have to deal with. It need scarcely be observed that Intellect (Memory especially) acts as well as Feeling. Appetites and Desires might also be appropriately dealt with under Will.

Perception, and Forming Ideas.

"**Ideas** are the proper furniture of the Mind."

The leading points in mental philosophy, especially for teachers, are (1) **Forming Ideas**, *and connecting them with* **words**; (2) **Storing Ideas**, with their associated words, and then **Reproducing** both at will; (3) **Subjecting Ideas to the action of higher intellectual powers**, and dealing with them in various ways.

Elementary Ideas are formed by the *Presentative* faculty (Perception), stored by the *Conservative* faculty (the retentive side of Memory), and reproduced by the *Reproductive* faculty (the active side of Memory, the power of recovery or recall). Other forms of Mind power, classed under the *Representative* and *Elaborative* faculties, may act on the recalled Ideas, and produce higher or more intellectual Ideas.

Perception is an **act** of Mind, by which a Feeling is referred to its cause, or to that which produces the Feeling.

A *Sensation* is the antecedent, an *Idea* the consequent, of a Perceptive act; "having Ideas and Perception being the same thing." *

Perception results from **Attention** *to the Feeling;* it includes (*a*) Feeling, a subjective mental state, a "*passive experience*," † together with (*b*) an *act of Mind*, a volitional concentration of Mind on the Feeling.

It may consist in (*a*) *Consciousness of Difference, i.e.*, in *discriminating* or discerning (1) that there are different things, or that one object differs from another, and is distinct from it; (2) that the same object has different parts and qualities. We are thus able to isolate or separate one object from another, to perceive individual facts, and multiply the possible materials of knowledge. (*b*) *Consciousness of Agreement, or Similarity.* Things perceived to be distinct may yet present discernible *points of likeness;* different things may have properties in common. Grass, leaves of trees, a shallow sea, a window blind, and a piece of cloth may all be green. Shades of greenness may be discriminated in like manner, whilst yet the common or similar property, greenness, is discerned. (Not only Perception, but all higher forms of mental action have been resolved into operations of Discrimination, or Similarity, or both.—See Bain. *Mental and Moral Science.*)

As with other terms in philosophy, **different meanings** are attached to the term **Perception**.

"Perception is most properly applied to the evidence we have of external objects through our senses."—"Seeing, Hearing, Smelling, Tasting, and Touching are words that express the operations proper to each sense; *perceiving* expresses what is common to them all." ‡

Hamilton recognises both External and Internal Perception, but he thinks the latter is more properly termed "Self-Consciousness" (see page 461).

Perception then will be regarded as "**the consciousness of external objects**" "*the apprehension through the senses of external things.*"

Perception is therefore taken as equivalent to *External* or *Sense-Perception, and can take place only when the object perceived is actually present.*

Perception may be relatively simple or complex.

* Locke, *Essay on the Human Understanding*, B. II., ch. i., sect. 9.

† Calderwood.

‡ Reid, *Intellectual Powers*, Essay I., ch, i.

Each sense-organ has its group of perceptivities, and as we can limit our Attention to a single subdivision of one sense, or can attend to more, or can set several senses to act, the mental result may differ widely in different cases.

Commonly, several senses act simultaneously, and *our percept is made up of a bundle of associated Sensations (Feelings) referred to an object.*

In perceiving an orange, for example, many forms of Sensation are experienced in relation to one another, and all are mentally referred to the object (orange) producing them. Through the *eye* we perceive shape, size, colour, details of structure, and the general relation of parts and whole. (The *ear* is not appealed to in this case.) *Touch* yields sensations of temperature, smoothness, and elasticity; *Smell*, of a peculiar fragrance; *Taste*, of acid, and sweet, together with the special taste of the orange. The whole percept is very complex.

Note.—Some maintain that there is no direct perception of objects; that the Mind can be conscious of nothing but its own states, and that *Perception is an inference* from Sensation. All we can be sure of, they say, is that we are conscious of our sensations, or that the sensations exist for us. They urge also, that in certain forms of brain-disorder, the patient thinks he sees things which are not really present; he infers their presence from his morbid sensations, as healthy people may (or do) from ordinary sensations.

Others hold that our *Consciousness of external things is immediate, and not inferred.* Common-sense, in their opinion, demands the existence of a something (substratum, noumenon), to which the perceived qualities belong. We are, therefore, justified in saying that we perceive objects, although in strictness, we may be conscious only of sensations "caused" by those objects.

Ideas are formed by (1) *Sensation*, (2) *Reflection.* *

(1) All our primary or *elementary ideas are derived through the Senses.*

There is nothing in the Intellect which was not previously in the Senses," or which has not been founded on the operations of the Senses. (This dictum is not universally accepted; teachers, however, may safely *act* upon it.)

(2) These *primary ideas are afterwards subjected to* various

* Locke, *Essay on the Human Understanding*, B. II., ch. i., sections 1—4, and 23, 24.

manipulation, combination, and modification, by other forms of Mind power, or by *Reflection.*

Consequently, the Mind is furnished with Ideas, more or less complex, constructed out of original Percepts, but which have usually undergone frequent alterations, additions, and curtailments, before they are finally settled.

Locke thinks that this class of Ideas, which are formed by *thinking* properly so called, is far less common than is usually supposed, and that although people use the words, the Ideas are wanting. *

Processes in forming Ideas. A. **Primary, Elementary, or Original Ideas.**

(1) **Stimuli.** External objections act as *stimuli* to the Mind, through the Senses, and make *impressions* upon it.

The nerves of special sense (and of ordinary "feeling") connect the brain, which is the peculiar organ of the Mind, with the sense-organs (and tissues of the body).

(2) **Traces.** These impressions do not preserve their full original force and form; yet they leave *traces*, more or less distinct and lasting.

The character of the trace is influenced by (1) the *natural plasticity and retentive power* of the Mind; (2) the degree of *concentration or attention* at the time; (3) the *character of the impressing force* or stimulus; and (4) *other circumstances*, such as increased power consequent on training, state of health, &c.

(3) **Ideas.** "The trace, the copy of the Sensation which remains after the Sensation ceases is an Idea." (*Jas. Mill.*)

"Every mental impression has its *Idea.*" (*Hume.*) "The impression persisting after the thing has gone is the Idea." "The mental impression we are supposed to have when thinking of the sun, without seeing the actual object, is called our *Idea* of the sun." (*Chambers' Encyclopædia.*) "The recollection of the Sensation [is] what is properly termed the *Idea.*" (*Bain.*)

It is as though, in forming an Idea, a particular nerve current was set up, and that when the Idea is recollected, the current is repeated; the old trace is like a track, along which the renewed force passes. † Ideas may be regarded as traces, or (weaker) renewals, or recollections of Percepts.

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* See *Conduct of Understanding*, section ix.

† See Bain, *Education as a Science*, page 13.

B. **Modifications of original ideas.**

(1) **By other impressions.** The trace formed by a single impress is commonly greatly modified by later impressions. *Cognate impressions tend to fuse into a whole.*

If we had seen but one horse, and that only once, an attentive Mind would form, and might retain an Idea from the single impress. But our generalized notion of a horse is a "mental reproduction of the sum of the attributes"* which we have observed in all horses, and covers a certain range of colour, form, speed, temper, &c. (See *Conception*, I.)

(2) **By forgetting.** Part of every trace invariably disappears.

This exercises a further modifying effect on the Idea.

(3) **By mind action.** Percepts (Ideas) are subjected to various elaborations, modifications, decompositions, and recombinations by Mind power alone, or, as Locke has it, by *Reflection.*

Conception, Comparison, Judgment, interest variously; fresh Percepts also frequently come in, and parts escape, and so on continually.†

Ideas and Names. When the Mind has formed an Idea, it feels a further want. The Idea floats hazily in the Mind, and is likely to pass away, and be difficult of recall, unless it can be attached or closely associated with something more fixed, and more easily remembered. This want is supplied by a *Name* for the Idea. The *Name* becomes the *sign of the Idea;* Words are the symbols of Thoughts.

A Name may be either *a single word* ("*orange*"), or *a collection of words* ("*the fruit of an orange tree*").

When the name is indissolubly connected with its Idea, it serves a double purpose:—

(1) It is a *mark serving to recall a former thought* to our own Mind;

(2) It *enables us to make our Ideas known to others, or to let others know what we think.*

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* J. S. Mill.

† For an interesting account of the whole process see *Beneke's Psychology*, by Raue and Dressler.

So far as *Perception* is concerned, **good Intellectual teaching** has for its *fundamental points* :—

(1) Getting the learner really to "*see*" or *perceive*, **to form clear, distinct, and adequate ideas** or notions.

(2) Causing him to **associate** these **ideas** indissolubly **with suitable words.**

Both should receive attention. (1) that the learner may have *something to say*, or that he may understand what he is talking about; (2) that he may be *able to say it*, or to convey his meaning readily and fully. The character of his own thinking, and of his intercourse with others, depends on the number and nature of his ideas, and his facility in mentally connecting and expressing them in suitable words.

"Perception [is] the first step and degree towards knowledge, and the inlet of all the materials of it." "Perception is the first operation of all our intellectual faculties, and the inlet of all knowledge into our Minds."*

Knowledge *begins* with *Discrimination.* Consciousness of Difference is the *starting-point of Mind.*

There can be no new Consciousness without a change from the former mental state. To *perceive this change or difference* is to discriminate. (See Consciousness.)

We cannot know anything except as *distinct or differentiated from everything else.* "Where no object is discriminated, we are not conscious of any." All is a blank until Discrimination, or Perception, begins to work.

Knowledge cannot go beyond our power to discriminate. "Our intelligence is absolutely limited by our power of Discrimination."†

Every separate fact we can know demands a distinct discriminative act to isolate it, *i.e.*, to make it a fact for us.

Things which we cannot discriminate or discern, can have no existence for us, and therefore cannot be known.

We can, at the utmost, learn only so many things as we can discriminate, or *as are separable by our discriminative faculty.* The possible extent of our acquirement is bounded by the number of separate things which can exist for us.

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* Locke, *Essay on the Human Understanding*, B. II., ch. ix., sect. 15.

† Bain, *Education as a Science*, pp. 15, 16.

Do not confound Discrimination and Memory. Discrimination separates and perceives the facts which Memory retains, but if there were no Discrimination, there would be nothing for the Memory to deal with. Memory may not store all the facts which Discrimination offers, but Memory cannot obtain a single fact by its own action, or unless it be isolated and presented by the Discriminative faculty.

"*We are most intellectual where we are most discriminative;*" *i.e.*, where we *perceive* most fully and clearly; where the materials of knowledge are differentiated most completely; where we perceive the greatest number of differences (and similarities); where we can appreciate the most minute.

Where these conditions exist, the other intellectual powers have the widest field to work in. Thus it is that the scientific botanist is more intellectual than the ordinary gardener, the skilled physician than the uninstructed layman, and the well-furnished teacher than the rule-of-thumb schoolmaster. Each "*sees*" so much more than his less fortunate fellow.

All *subsequent mental action is influenced by Perception.*

Perception is the initial but essential step in acquirement. All higher mental operations are concerned with percepts, ideas, the products of Perception. *If then perception be obscure, confused, or inadequate, knowledge cannot be clear, distinct, or sufficient, and thought of every kind must partake of the weakness of the original process.*

This is a most important fact for teachers, and it should exercise its due influence on their aims and their methods.

Every sense-organ has definite forms of Perception associated with it. But *some senses far excel others in perceptive and knowledge-giving power. Hearing* ranks high, *Touch* higher, but *Sight* highest of all.

Good teaching *sets each sense-organ to work,* so far as is consistent with school-proprieties and common-sense. The number of associated percepts is thus multiplied, and the Idea formed by their union is more complete.

Above all, *much should be made of the eye in teaching.* Size, form, position, movement, distance, light, colour, with all their variations, are perceived by the eye. Illustrations of its delicate discriminative power, and of the persistence with which visual impressions are retained, occur in abundance. If we think of a rose, for example, it is not the perfume, but the form, colour, and size—*visual* phenomena—which arise first, and

are remembered best. The *forms* of letters and words, script characters, map outlines, diagrams in geometry, the pictures in a book, and indeed every object we have attentively *looked* at, are remembered more easily than any thing else connected with them. Names of places are often remembered, because they have been associated with their *position* on the map. A passage in a book may be recalled, because we remember the *particular part* of the page on which it occurred. Even in Mental Arithmetic, facility depends largely upon keeping the figures operated upon before the *mind's eye*. (See *Cultivating Perceptive Faculty*.)

The *Perceptive faculty acts with most energy during childhood.*

Childhood is nature's time for gathering the elements of knowledge. Nature has filled the child with *Curiosity*; she prompts him to use his sense-organs on everything about him. By following this tendency to *observe*, he acquires the most important and lasting parts of his knowledge. By guiding and systematizing this energy, we also do the best that can be done for his early education.

Energetic Perception is accompanied by firm Retention.

The deeper the impress, the more lasting the trace. Among the things we still remember best are those learned in our childhood, when our Perceptive faculty was most vigorous. Other things easily remembered, either caused strong feeling at the time, or have made a deeper impress than ordinary by repetition.

Other forms of faculty co-exist with Perception.

Although Perception is most vigorous in childhood, yet the powers of Imagination, Conception, Judgment, and Reasoning exist with it, in a primitive state. Each faculty ripens at its own time, and some reach their greatest vigour later on. Whilst it is bad economy to force intellectual growth (*e.g.*, to begin with Grammar, or deal with the principles of Arithmetic too early), yet teachers should remember that children possess these faculties, and good early education will do its share towards their development.

Perception loses much of its relative freshness as other intellectual powers come to the front, but it must be kept active, and should be *trained to acuteness* as school-life proceeds.

"*Qui bene distinguit, bene docet.*" (See Laurie's "Comenius," p. 115.)

He who points out differences well, teaches well. Perceiving many and minute differences is the essential to good learning; enabling the learner

to do this is the mark of good teaching. *Break up what you wish to teach into suitable parts, and present each clearly, distinctly, and well.*

Cultivating the Perceptive Faculty really resolves itself into *exercising the senses* well, and *directing their activities* to suitable objects.

The proper intellectual training for early years, at home, in the infant school, and indeed throughout the school, lies in getting children to *perceive* differences and similarities, to "see," to "look sharp," and be sharp or keen in looking. This fundamental being met, other forms of intellectual exercise may follow with propriety.

Leading conditions affecting Perception. (1) *Fresh and healthy brain.*

This is a physical necessity for good mental work. With it may be mentioned *general good health*, for physical debility affects the brain as well as the other organs.

(2) *Natural quality of Mind.*

Some minds are naturally incapable as compared with others.

(3) *Mental attitude;* the degree of mental concentration, or *Attention.*

This is influenced from within and from without, by circumstances favouring *direct* and *indirect interest*, and by others tending to *distract* Attention.

(4) *Skill of teacher;* the art with which he exercises the faculty, dependent upon acquired or natural ability.

(5) All that is said in this chapter bears more or less directly on the matter.

Means of cultivating Perception.—(1) **General.** Every school subject gives some opportunity for exercising perceptivity.

Make teaching objective as far as you fairly can in all subjects.

Repeating the substance of what has been urged elsewhere;—cause children to *look*, to use their eyes carefully in Reading and Spelling. Good teaching of Writing enables pupils to *perceive* points of excellence and defect, and so on throughout. Devices for securing the needful attentive observing depend on the teacher's inventiveness and tact.

Never give a Geography lesson without a *map*.

Introduce *models*, *specimens*, *pictures*, *diagrams*, and *sketches* where you can, and use the *black-board* freely in all lessons.

In early Arithmetic, use *beads*, *marbles*, *strokes*, *dots*, *the fingers* (but withdraw such aids as power grows). Bring in *actual weights and measures*, and make *object lessons* when teaching tables.

Let younger children be taught to use their eyes, and other sense-organs, by *observing things in the room*, and be trained in *telling what they perceive* through the eye, the touch, etc.

Draw *illustrations from common objects*, and use such illustrations constantly.

(2) **Special.** Apart from general objectivity, which is now commonly aimed at in early teaching at least, some subjects and certain modes of treatment are peculiarly adapted for ministering to the Perceptive faculty.

(*a*) Foremost of all is the **Object Lesson.**

These lessons, if well-managed, *cultivate* Sense-perception, or *Observation*, accustom children to *express their thoughts* in words, *increase their* available *stock of words and of ideas*, and by thus *storing material for thinking*, also *prepare the way* for more difficult and advanced study. What has been said before on the value of special oral lessons, holds here also. They may indeed yield a *general training for faculty*, for the capable teacher can so choose and manipulate his subject as to bring it to bear where he wishes.

Interest is always aroused by actual objects. Young children are demonstrative in this, and though elder scholars are more reserved, the fact holds throughout. Curiosity thus excited, may need intensifying, but it must be directed, and it is in *maintaining and directing Curiosity*, so as to secure clear, distinct, and adequate Perception, that the essence of a good object-lesson lies.

With little children, and to a degree with all children, the teacher should *cause them to exercise their sense-organs in turn, and on system, upon the object.* Object-lessons are often spoiled by hap-hazard working.

Get children to *look at the object*, and form ideas about its size, shape, colour, and parts. *Test them by questions* to see how far their idea is accurate and complete, and to exercise them in using words. *Direct their observation* to points they may have missed. *Bring other senses to bear* on the object; let the children notice its hardness, softness, elasticity, roughness, smoothness, weight, texture, the sound it emits if struck, its odour, its taste, and so on as far as is desirable. *Give information* at

proper places, partly to clear the way, partly to give completeness. For example, in a lesson on "calico," the children may be able to tell that it is made of cotton, but the teacher must tell what the cotton-plant is like, and must bring specimens and pictures. He may also have to tell where it is grown, and where and how it is manufactured. But his aim should be to *get the children to perceive as much as possible* and to *tell them as little as possible*. Ask for *similar things* in the room, at home, in the meadow, &c., and thus *appeal to independent Observation and Memory*. Cause children to tell you what they have learned, *i.e.*, to *put their ideas into words*; this is done by good questioning.

Make the impress decided, clear, definite, by securing Attention, by allowing due time, or not being in a hurry, by repeating "artfully," by using *similarity and contrast* freely, and by a sensible employment of all the devices you can properly bring to bear. Obscurity and confusion are to be removed. *Clearness* as a whole *and distinctness* of the parts *in the Percept* are to be aimed at. Therefore *make sure as you go; do not attempt too much*.

The *proper order* is **Things,—Ideas,—Words.**

The main purpose of the Object Lesson is to exercise various forms of Perceptivity; this, if well done, stores the Mind with correct Ideas, and with associated words; the children then carry away additional knowledge and additional power: they have something to think about, and they are trained in thinking.

Any Object Lesson which does not provide such extra knowledge, and especially, which does not furnish systematic practice for the Perceptive faculty (and in its measure for *higher forms of mental power also*) must be regarded as a failure.

Many teachers spoil their work, and damage themselves, by working slavishly to other people's plans. Good models of Notes of Lessons on objects are obtainable, but it is bad policy to copy them as they stand, or to adhere too closely to them as a pattern.

Mr. Mosely writes thus. "A teacher proposing to give an oral lesson on coal, holds up a piece of it before his class, and having secured their attention, he probably asks them to which kingdom it belongs—animal, vegetable, and mineral—a question in no case of much importance, and to be answered, in the case of coal, doubtfully. Having, however, extracted that answer which he intends to get from the children, he induces them, by many ingenious devices, much circumlocution, and an extravagant expenditure of the time of the school, to say that it is a *solid*, that it is *heavy*, that it is *opaque*, that it is *black*, that it is *friable*, and that it is *combustible*.

And then the time has probably expired, and the lesson on the science of common things, assumed to be so useful to the child, is completed." The teacher "gives this lesson easily, because the form is the same for every lesson; the blanks having only to be differently filled up every time it is repeated." The writer once heard of a young teacher of this stamp, who, in speaking of the "qualities" of the elephant, told his class that it was *opaque!* Some teachers have a select stock of words expressing qualities, such as *opaque*, *friable*, *combustible*, *soluble*, *absorbent*, *ductile*, *crystalline*, &c., not in common use, but which they drag into their lessons often without much judgment, and to the waste of time which ought to be more rationally used.

Object-lessons should be arranged in such courses, that one may lead to another.

Object-lessons should reach further, and be continued longer than is usually the case. They now occupy a more prominent place in school curricula than formerly.

The action of the Science and Art Department, and of the Education Department in its more general relations has done something for the higher classes especially, and will do more as teaching becomes more objective.

But a systematic extension of object lessons and regular courses, are wanted for the elder scholars. In this particular our plans are seriously defective. In the upper half of our schools, how many boys could point out and name correctly the parts of an apple-blossom or a lily? How many could refer conspicuous specimens of Compositæ, Umbelliferæ, &c., to their natural orders? How many could point to the constellations of the Zodiac, and pick out their leading stars; indeed, how many could point out Orion, or Scorpio, or Ursa Major, or other grand constellations? What do they know about the history and relative position of geological formations? What knowledge have they of the broad structure of animals, or of those wonderful details which delight the student? Such questions could be multiplied, without obtaining satisfactory answers. Yet the knowledge connected with them is truly "*useful*," the teaching could be *objective*, and the objects "*common*." A fairly well-read teacher could send his scholars away from his upper classes, able to look about them, and see, and know, where most are now incapable, because their eyes have not been opened.

The objection, of course, is, that this cannot be done, whilst so much else is required. Perhaps, but are we sure? If so, what a pity it is.

Note. The prominence given to oral object teaching, together with the relative disregard of books, is a leading feature in Pestalozzi's system. Hence he is sometimes spoken of as the originator

of Object Lessons. Locke and Rousseau had urged, however, that the Perceptive faculty should be exercised on actual objects, and that real ideas should be formed before attempting to teach the expression of ideas in words. Pestalozzi's theory was better than his practice; his lessons on things consisted largely in the children repeating simultaneously what he said about them; the words he used often conveyed little meaning to his scholars. But here, as in other matters, he had the germ of better things, and others have developed his principles, and applied them as he could not himself. Few, however, have been privileged to win the love of their pupils as Pestalozzi did.

(*b*) **Colour and Form.** These are a special kind of Object Lesson, or special lessons in Discrimination. In them the child is to be led to see (perceive), and then tell his teacher in various ways what he sees; he is to form Ideas, and then say what he thinks; he is to combine the Ideas also, and subject them to different forms of Mind faculty.

The teacher is to superintend and direct the child's observation, to secure proper use of the sense organs and mental powers, to add requisite information, to supply needful words, and to exercise the child in using them aright.

(1) **Colour.** The teacher might begin with the *greatest contrast*, black and white. Let him not, however, talk about "absence of all colour," "presence of all colour in definite proportions," and the like, except in an advanced class, and until he can *show* what he means by experiments. *Exhibit black and white objects* in abundance, and get children to pick out and name others in the room, outside the school, at home, and so on. *Degrees of blackness and whiteness* may be dealt with, and "blackish," "whitish," "rather black," "very black," brought in. *Examples are to be constantly used*, and the children asked to give other instances of the colour under consideration.

The *primary colours* can be introduced in the same way, many red, yellow, and blue objects being shown by the teacher, and the children being required to pick them out as he directs. Their memory, or remembered percepts, should be utililized as before. *Shades of colour* can be shown in wools, cloth, &c., or better perhaps by actually rubbing up colours before the children, and painting on paper with them, the shades being produced by diluting the colour with water to the required tint.

Secondary colours, purple, green, orange, can be made by mixing the

primaries before the class, the children being required to notice the constituent colours, and the effects produced by mixing them. Discrimination and Memory should be exercised as before.

Tertiary colours may be dealt with on the same principle.

By proceeding thus, the learners obtain some useful knowledge. But the main value of the lesson lies in the practice they provide for Perceptivity, and the quality of this practice depends mainly upon the teacher, or upon the way in which he interprets the general principles and rules for object teaching.

N.B. In practice, several lessons would be given on this subject.

(2) **Form.** Some would begin with surfaces, or even with solids, and proceed *analytically* to boundary lines. (See Kindergarten system immediately following.) Others would adopt the opposite plan, and commencing with lines, would proceed to combine them on system; they would teach *synthetically*. In either case, the connection between lines, surfaces, and solids would be perceived at the end of the course.

The teacher may start with *straight lines*, horizontal, perpendicular, and oblique. He will not, however, bring in these hard words until the children are ready for them; he will rather say, "straight across," "straight up," "sloping." Each should be *abundantly illustrated*, by holding a ruler, or penholder, or a stretched string in the different positions, by drawing lines on the black-board, by getting children to draw on their slates, by showing, or causing the children to show corresponding lines on the desks, floor, walls, and objects in the room. He will fix his teachings, and help children to express their ideas by constant *conversational questioning* as he proceeds. Other exercises on the *relative length* of straight lines, on their *parallelism*, on *dividing them into* a given number of *equal parts*, may follow. *Technical names* may be introduced if clear ideas have been formed, and so far as the children can bear them; if these be brought in, they must be fixed by varied repetition.

(*N.B.* Do not attempt too much at once. Several lessons must be made for little children on the straight line, and the many points which may be connected with it.)

On the whole, it will perhaps be better to take combinations of straight lines before introducing curves.

Angles (Corners) *and Crooked Lines* would then be dealt with. Here, again, the teacher's main reliance is objects, plenty of examples. A T square, and a jointed stick, will be useful accessories.

Rectilinear figures will follow.

Curved lines, the circle, the ellipse, would come next, and simple *solids,* the cube, sphere, and cylinder afterwards.

We repeat that the main purpose of all these lessons is to cultivate the

Perceptive faculty and make it keen. Therefore employ *Contrast and Similarity;* show what a thing is partly by showing what it is not. Exercise *Comparison and Judgment* also. Let children *use their slates* freely. In every lesson *illustrate the form* abundantly by all kinds of objects which can be shown; *drawings on the black-board* are most useful here. Cause children to think, and tell the names of objects of similar form, and *deal with their answers* so as to make for your purpose, paying especial attention to correcting their mistakes. Some teachers manage to construct little narratives about cart-wheels, pennies, and other round (circular) things, and thus employ the child's *Imagination*, even in lessons on Form.

The child's liking for doing something is gratified by *constructive lessons*, in which figures are built up from lines, and elements already known. ("*The Jointed Lath*," translated by E. Heerwart, is well worth perusal on this point.)

Boxes of triangles and other geometrical figures, as well as illustrations of colour, should be provided in every school. These can be bought cheap, or can be made by the teacher himself.

(*c*) **Kindergarten** was devised and introduced during the first half our century, by the enthusiastic Froebel, a man remarkable for his original methods of dealing with children, and his power of winning their love.

Believing that sound method recognises, conforms to, and utilizes the child's natural promptings, and noting the child's natural activity, curiosity, and love of play, Froebel contrived a series of "*gifts*" like playthings, as well as courses of "*occupations*" like games, and made his teaching combine earnest instruction with cheerful play; it was indeed *play with a purpose*.

He led children to act, to do, to make,—to observe, and to think so far as their powers went. Of direct instruction he gave little, but he caused children to think and produce for themselves, supplying them with words as they wanted them, and making frequent use of rhyme and song. He taught them to construct simple objects out of materials which he gave, put them through rhythmical movements and easy gymnastics, inculcated lessons of kindness, truthfulness, and morality, and kept them in a state of constant happy activity.

His means and methods have been amplified, developed, and systematized by later workers.

The first gift for very young children consists of *six soft balls*, red, blue, yellow, green, violet, orange, attached to strings of the same colours. These gratify the child's liking for colour; different colours are contrasted and distinguished; spherical form and tendency to roll are associated. The child notices the movements of the ball on the string, up and down, round and round, bounding, in the box, on the box, under the box, &c., and is exercised in holding, rolling, swinging, and catching the ball. All these exercises are suited to the budding Perceptive powers of the little ones. Amusing ditties and rhymes bearing on the movements, and on the qualities the kindergartner wishes the children to notice, are pressed into service, and much is made of tones of voice, rate of speaking, and imitative movement. Scores of games have been contrived in connection with this gift.

The second gift consists of a *sphere*, *cube* (or two cubes), *and cylinder*, —which give scope for more numerous exercises. The number of sides, corners, and edges can be counted. Notions about back and front, left and right, horizontal, perpendicular, and sloping lines, right-angles, circles, squares may be formed. The appearance each object presents under different conditions can be distinguished, and comparisons between the objects and other things may be made. For example, the cube may be compared and contrasted with a box, and its surfaces and edges with the walls of the room, the face of the desk, the cover of a book, the lines of the walls and floor, etc. With the cylinder we may connect a roller, a lead-pencil, a ruler, a roll of paper, the trunk of a tree, and so on. The sphere may be compared with a ball, a marble,—an orange, a lemon,—an apple,—a man's head. Each object can be utilized as a basis for exercises in Perception, and then for Memory, Imagination, Conception, and Judgment. But to do this well, the teacher's own mind must be active; he must have some originality, as well as a large measure of adaptability, sympathy, and teaching instinct.

Gifts 3 *to* 6 consist of cubes variously divided, and are like boxes of children's bricks of different sizes and proportions. With these many ideas can be gained about solids; the child's liking for building and making things can be gratified, whilst he is taught to observe and construct according to plan. Every construction should serve as an object for a lesson, and many and multiform teachings may and should be connected with it.

Tablets, triangles and quadrilaterals are afterwards given to the child, and his ideas about surfaces are amplified by using these objects under guidance; he learns much of what one might fairly term "practical" geometry in this way. Other lessons on Form are based on the "*connected slat*" or "jointed lath," and these are further amplified by using the

"*disconnected slat*," slips of wood of various length, width and thickness. *Stick-laying* and *ring-laying* are employed to build up pictures of common things, figures, letters, &c.,—besides other advantages, these exercises are found to be a good introduction to drawing. The child is also set to *fold paper*, in which numerous if not unlimited forms may be made. *Paper* is also *cut*, *folded*, and *mounted* variously, and *woven* and *intertwined* into geometrical patterns. A good teacher will use all these to invigorate Mind power, as well as manual dexterity.

Skeleton *models* of squares, cubes, tables, chairs, houses, &c., are constructed under direction, and to pattern, from softened *peas*, pieces of *cork*, and little *sticks*. Or the child may be encouraged to work independently, and allowed to exercise his constructive ingenuity on lines of his own.

Drawing and painting are done in books specially prepared for the purpose. Figures are *pricked on paper*, and various kinds of *embroidery* and *sewing* are taught. *Modelling* in clay or in putty is included.

From this meagre enumeration of modern Kindergarten gifts and occupations, an intelligent teacher can form some idea of the possibilities connected with Froebel's scheme in its present developments. But to form an adequate notion of the number and variety of pleasing exercises which can be made up by a kindly and clever teacher, a good Kindergarten should be visited; failing that, or in addition to it, works on the method should be studied. (The following are good explanatory or suggestive books: *Guide to the English Kindergarten*, Ronge; *The Kindergarten Guide*, M. Kraus-Bœlte and J. Kraus. Other smaller works, especially those by Fraulein E. Heerwart, may be cordially recommended.)

Children who have gone through a good Kindergarten training, may be expected to make rapid progress when transferred to the ordinary school.

For they have acquired habits of obedience, have learned to control and use their limbs, and have been trained to observe, work, think, and use their faculties generally, and to find pleasure in it all. They have also laid up a store of ideas, have been led to see what words mean, and have been exercised in using them. Every form of further early acquirement must be more easy to a child so trained, than to one who has had no such advantages.

Some teachers fail badly, a few succeed admirably, when they try to deal with children on this plan.

The Kindergarten gifts, and occupations, and songs, and movements, and plans, offer grand possibilities to him who can use them. But they

are tools only, and may be put to a poor use. Knowing the conventional occupations is not enough; the essential point is, can we occupy the children's attention profitably and pleasantly with them? Not the gifts, nor the method, but *the teacher's individuality*, *ingenuity*, *spirit*, and *style of working*, are the prime factors in success. A good Kindergarten teacher must be exceptionally gifted with sympathetic insight, inventiveness, and power of adaptation.

Object Lessons, and Lessons on Form and Colour, may be made to yield a training analogous to, if not identical with that afforded by the recognised Kindergarten system.

In all, the object is to get the child to *observe*, to *perceive*, *reflect*, and *tell*, under the teacher's direction,—to store the Mind with Ideas and associated words, aud to exercise Memory and other forms of mental faculty judiciously upon both. Thus the Mind is both stored and strengthened. And let us always bear in mind, and *act on the principle*, that **securing clear, distinct, and adequate Perception** *is the leading aim and mark of sound teaching.*

The Kindergarten, and object lessons, and good teaching generally, have here been looked on as means of cultivating the Perceptive faculty. It need scarcely be observed, that work and training for all forms of mind power, so far as children are capable at their stage of development, is derivable from lessons such as have been considered.

Memory.—Storing and Reproducing Ideas.

Memory is the power which Mind has of (1) *retaining*, and (2) *recalling* knowledge.

What is actually present to our Consciousness at any time, is but an infinitesimal part of what we know. The rest of our knowledge is latent for the time; it is stored away, until recalled voluntarily or involuntarily.

The *excellence of Memory* is gauged by the *ease and fulness of the recall.*

"A good Memory is quick to receive, steadfast to retain, and prompt to deliver." * Facility of impress is a quality of Mind as a whole, rather than of Memory.

Memory is essential to acquirement; Memory and acquisition are mutually dependent.

* Ascham.

Without acquisition there would be nothing to remember. Without Memory, we should lose as fast as we acquired; *i.e.*, there would be no actual acquirement.

Memory proper has two aspects. I. **Persistence, Simple Memory, Retention, "Conservative Faculty,"** the *passive* side of Memory, having for its function "the keeping of those simple Ideas which from Sensation or Reflection [the Mind] hath received.*

This power of *retaining* knowledge is *the pre-eminent mark of a good Memory.* It lays up or stores material for Resuscitation to deal with. There could be no Reproduction, if there were nothing to recall.

II. **Power of Recovery, Remembering** or **Recollecting, Resuscitation, Power to recall** an absent thought from unconsciousness, "**Reproductive Faculty,**" the *active* side of Memory, "the power to revive again in our Minds those ideas, which, after imprinting, have disappeared, or have been as it were laid out of sight." *

This faculty, or branch of faculty, may act in two ways,—

(*a*) *Involuntary*, or Spontaneous, *Suggestion.*

(*b*) *Voluntary Recollecting* or *Reminiscence.*

Both Suggestion and Reminiscence depend upon the "*Laws of Association.*"

Differences in Memory. In no other mental faculty do people show such variety of power as in Memory.

Retentive power varies; one Mind can receive and hold permanently much more knowledge, many more separate facts than another.

Power of recall varies; one Mind brings forth or delivers up its stores readily, another slowly, and with difficulty. Most people have felt at a loss at times, for something they feel convinced is in their Mind; they know, but they cannot remember. Some are more often in this condition than others.

Nor does weakness or strength on one side involve corresponding weakness or strength on the other. A person may be able to acquire but little, and yet have that little well at his command. On the other hand, a boy may learn easily, and still have a difficulty in recalling what he knows.

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* Locke, *Essay on Human Understanding*, vol. II., chap. x., sects. 1 and 2.

Conditions affecting the character and permanence of the impress. (1) *Minds differ.*

As putty, sealing-wax, and bronze can all receive an impression, but vary greatly in respect to the ease with which they are impressed, the definiteness of the lines, and the tenacity with which they hold the impress, so *Minds vary in plasticity, receptivity, and retentive power.*

These differences depend greatly on *natural* endowment, but *education or training* has an important influence.

Power alters also; it commonly *deteriorates in old age*, and is *modified in youth and manhood* by development of different forms of faculty at various stages. *Memory is strongest in boyhood.*

There is *a point beyond which Mind seems incapable of assimilating* fresh Ideas. Anything gained then seems to push something else out. Some Minds reach this stage much sooner than others.

(2) *The mental attitude varies.*

Attention, or voluntary concentration of Mind force, *is essential:* the effect produced is proportional to the amount and energy of this volitional effort. Only when and so far as Mind is attentive, is it in a truly receptive attitude. *Interest* is therefore a leading factor. The conditions favourable and unfavourable to attention demand the teacher's care and thoughtful consideration.

"*Attention and Repetition* help much to the fixing any Ideas in the Memory. But those which naturally make the deepest and most lasting impression are those which are connected with *pleasure* or *pain*.*

(3) *The impressing force* produces an effect, proportionate to its *quality* and *strength*, together with its *mode of application.*

It is desirable to make the impress vivid, *clear*, sharp-edged, and *deep*. Every impress leaves a trace, but feeble traces vanish quickly. Anything really well learned once is easily retained, or if lost temporarily, is easily regained.

A *single impress* may leave an indelible mark, when the impressing force has taken powerful hold. Mostly the stamp is made deep by reiterated impressions, by many blows, by *much repetition.*

(4) The *number and character of the Associations* formed between new and old impressions (traces) is important.

The *greater the number* of Ideas which are bound together, the more likely is any one of them to recall its associates.

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* Locke, *Essay*, B. II., ch. x., sect. 3.

The *more intellectual* and the *more obvious* the bond of Association, the safer is the connection.

Where Ideas have been *firmly connected*, they are most likely to cohere; no one of them is likely to become detached from the group and lost.

(5) Traces are liable to *vanish*, as well as to be *obscured*, or practically *obliterated* by other impressions.

It is as though there were a struggle for existence amongst Ideas, in which the weakest perish or are overborne and hidden. Each new impress on the Mind may blur and confuse earlier impressions, and will do so if care be not taken.

Forgetting. The Mind often loses, or seems to lose entirely, ideas and possessions which it once had.

New cognitions push the older into the background of our Consciousness. The older thus get hidden, or become obscured. If they are to continue to exert their old force, they must be brought to the front from time to time. *Repetition and review* are wanted.

Fresh cognitions draw to themselves the greatest share of Mind force; the new are vivacious at the expense of the old. *Repeat or renew old impressions* from time to time.

When the whole *mental force* is *concentrated on a few* impressions, *Memory can hold all firmly, and recall each easily.* But if the same amount of force be distributed over multitudinous Ideas, the grasp of each is necessarily weakened. *It is bad economy to attempt too much.* Attention concentrates force; divided Attention, or distraction, spreads it over a wider area, dilutes it, and lays it open to multiform calls from all directions. Every impress then is weak, and every trace evanescent. *Insist on Attention.* "*Temporary adhesiveness*" may be produced by abnormal brain excitement. Acquirement under such conditions is short-lived; what is learned is soon forgotten. *Over-stimulation is a mistake;* it makes *wasteful* demands on brain energy.

"**Cultivating Memory.**" Vivifying and strengthening Memory is the *leading business or problem in practical Intellectual education.*

Cultivating Memory resolves itself into **Exercising it duly,** and this into (1) *presenting suitable material* for Perception and Retention, and (2) exercising Memory in *reproducing* what it has received.

The power of the teacher to cultivate the child's memory consists in his having a clear ideal and ability to present it clearly. From the child, honest, painstaking effort is required.

I. (*a*) **Material for Memory** to deal with. . Much of this is settled for the teacher, but much remains in his power.

The teacher will use his judgment and his right, to supplement and complete what custom prescribes. Teachers in State-aided schools must meet departmental requirements before attempting more; they can find plenty of material for Memory here, direct or indirect.

What children should learn is to be decided by (1) the value of the acquirement it itself, as *knowledge*, Geography, (2) its usefulness as *training*. *Euclid.*

(*b*) **Presenting this material** in the way most favourable to Apprehension and Retention.

In practice, this means *exercising* the Perceptive faculty and the **Retentive** *side of Memory* judiciously.

All rules on this matter are based upon, or included in, *Secure, clear, distinct, and adequate Perception.*

"*Perception and Retentiveness go together;*" a fact clearly seen, an Idea definitely formed, is likely to be a lasting mental possession. To perceive clearly is practically almost equivalent to holding firmly. In securing clear Perception, we provide for permanent Retention.

Bringing about this real "seeing" and understanding is the leading aim and feature in good teaching, and it is upon this that the skill, arts, and devices of the teacher are to be expended. These we repeat are :—

Careful methodizing and *arrangement of the matter selected;* that there may be no muddle.

Presenting each fact separately, or in isolation.

Apt and sufficient *explanation and illustration* to make all clear.

Grouping cognate facts on some evident principle, to favour *association*. Binding fragments firmly together, and connecting new knowledge with old, are to be aimed at.

Varied *repetition*, in the same, and in different order.

Time is required, that impressions may be distinct; do not be in a hurry.

The *active co-operation of the learner* must be secured; he must *concentrate his Attention* on what is presented. Whence the good teacher's art includes :—

(1) Presenting what has to be learned in a *positively attractive* form:

securing that outside, automatic interest, such as little children have in a fairy tale.

(2) *Making Inattention relatively* more *unpleasant* than Attention, when the subject is uninteresting in itself.

II. Exercising the Reproductive side of Memory, *i.e., practising the pupil in* recalling *and using what he has learned.*

Note. This exercise, being a form of Repetition, coupled with exalted Concentration if well performed, deepens the original impress; in reproducing, we secure firmer and clearer apprehension, and thus benefit Memory in both its aspects.

Power of recall cannot go beyond the stock of Ideas; *we cannot call up what is not in the Mind. Nor can we recall clearly and definitely what is hazy and indefinite.* We are, therefore, driven back again to Perception and Apprehension. *The character of the Idea depends on Perception,* and *Memory can reproduce only what it has received,* or indeed only so much of the original Percept as it still holds, or has not forgotten.

As, however, one Idea suggests another (see *Laws of Association*), one piece of knowledge recalled, frequently serves as a point of recall for some other, and that for yet another, and so on. This process, in well-ordered Minds, is largely under the control of the Will, which can compel Attention into directions it chooses, and can thus initiate definite chains of associated Ideas. The *power of recall therefore depends also on the number and character of the Associations* which the Mind has formed, *and on the degree of voluntary control it has acquired* over its possessions.

Common forms of exercise employed in school.

Memorizing and Repetition. *Simple learning by heart* exercises Memory, and strengthens it by practice; it therefore has a value. *Tables, dates, and some other things have to be learned thus* in the main. But the value of the practice is enhanced wonderfully when the Understanding, the higher Perceptivities are exercised also. "*Understand first, then memorize,*" is now accepted as a fundamental principle. The old practice of learning poetry or good prose in abundance, did good under proper management, and might be employed more extensively than it now is with advantage.

"Learning lessons," on which school lessons in History, Grammar, and exercises in Reading or Dictation, and the like, will be based afterwards. These should sometimes be memorized verbatim, at other times it will be enough to learn the substance, and not require details. The exercise may also profitably *follow* the school-lessons. *One great value of text-books* is in the facilities they afford for preparation, and for later reference. Some teachers do not use them so much as they ought.

Recapitulation may take varied forms, but all may exercise the Reproductive side of Memory more or less.

Questioning is the best mode of recapitulation, because of its directness, its ready application, and the variety it can assume.

Other exercises in Reproduction, such as giving a synopsis of part of a lesson, or the whole of it; writing the substance of a narrative or paragraph; reproducing the notes which were written on the black-board. Or the teacher may frame exercises involving the use of other faculties besides Memory, and may require partial Reproduction, and partial independent Constructiveness or Elaboration of Ideas from the pupil.

Periodical Repetition and Review serves to bring out, refurbish, and refix what would else be in danger of slipping away altogether. *Much is too often lost, for want of such lessons.*

The two great points for us, in dealing with Memory, are :—

(1) *Secure clear, distinct, and adequate Perception.*

(2) *Require the pupil to use what he knows.*

Cause him to bring forth his knowledge from the storehouse of Memory, and revivify it. Get him to look at it from different points of view. Teach him also to form the fragments into fresh combinations; and vary all these exercises until he becomes real owner and master of his possessions.

Association of Ideas.

Meaning. There is an *associating principle* or property of Mind, in virtue of which individual ideas and fragments of knowledge tend to cohere, or become connected or bound together.

When this connection has been brought about, one fact or idea serves to recall another; each *suggests* its fellow, and may serve as a point of resuscitation for all the rest.

"Ideas that in themselves are not all of kin, come to be so united in some men's minds that it is very hard to separate them; they always keep company, and the one no sooner at any time comes into the Understanding, but its associate appears with it." *

Illustrations of many kinds could be given.

(1) A child *repeats the multiplication table* in the early stages, because

* Locke, *Essay on the Human Understanding*, B. II., ch. 33, sect. 5.

each statement is knit to that which precedes it, and to that which follows it, by frequent repetition in a constant order. He therefore goes through "six times" without hesitation; ask him, however, for "six times nine." and he will be unable to tell you, until he has begun again at the beginning of the associated chain, and has followed it up link by link to the required point.

Whole *strings of words, dates, and facts* can often be repeated if children "can get a start," but they often fail if the first word, or first line, or some other leading link be not supplied.

(2) When a person sees the dome on the Law Courts in Melbourne, other domed buildings are likely to be recalled to mind; St. Paul's Cathedral, the British Museum Reading-room, University College (London), St. Peter's (Rome), &c. *Like recalls its like.*

(3) Every idea may not only be a starting point for a "*train of thought*," but *many series* may originate in the same present experience. I may, for example, see a portrait of *Sir Walter Raleigh.* This may suggest Queen Elizabeth, her father, her unfortunate mother, her sister's suspicions or jealousy, her imprisonment in the Tower, her vigorous reign, Mary of Scotland, Philip of Spain, the Armada, remarkable men and their exploits, &c. Or the Mind may break off from this train, and perhaps make the *Tower* a new point of departure, and recollections of its position and appearance without and within, its contents, facts in its history, prisoners and their history, may arise. Each of these may become a fresh starting point, and if the Mind be allowed to roam at large, the sequence of Ideas may lead to very unexpected endings. For example, the *crown-jewels* may suggest Colonel Blood, Charles II. and his court, licentious times, contrast with Cromwell and the Puritans, Hampden and Milton, Buckinghamshire, beech-woods, wooden-ware, &c.

Laws of Association. *Thought succeeds thought,* not at random, but *in obedience to law;* every act of Mind follows as a consequence of some other. *

One thought suggests another in conformity to certain determinate laws. † We may not always be able to detect the connection, or explain the reasons, but facts justify the assumption that such laws exist.

(1) Thought may follow thought, not through active, voluntary concentration, but by a species of *passive unintellectual suggestion.*

What commonly takes place in a fit of musing, or in idle chatter, is an example. This form of Suggestion predominates in ill-trained Minds.

* See Bain on Aristotle, *Mental and Moral Science*, App., p. 91.
† See Hamilton, *Metaphysics*, I., p. 352.

(2) Ideas may be connected *rationally; i.e.*, effects may be associated with causes, conclusions with premisses, &c. **Ideas** are then recalled by a *voluntary exercise of intellectual force.*

Strong and cultured Minds show this form of association best, and one aim in education is to enable one to keep thought under control, to think a thing out on predetermined lines, and to prevent thought from digressing into uncontrolled musing.

Isaac Taylor remarks that a man is likely to be prompt and successful according to the *rationality* and *closeness* of the Ideas formed in his Mind.

The leading *principles* of Association *have been variously stated* and arranged.

Stewart enumerates certain modes of connection between Ideas, but thinks it difficult, if not impossible, to bring the numerous causes of Association under a few heads. Brown, on the other hand, resolves all forms of suggestion into Contiguity. St. Augustine also "reduces Association to a single canon—Thoughts which have once co-existed in the Mind are afterwards associated." *

Two great principles or **Laws of Association**, Suggestion, or Mental Resuscitation are now usually recognised ; **I. Contiguity, II. Similarity.**

Isaac Taylor writes that the sequence or flow of Ideas is affected or influenced by "some circumstance of *resemblance* or dissimilarity," or "of *proximity* in space or time." Hamilton, Bain, Jevons, and others adopt a similar arrangement.

Contiguity serves to associate and recall things which occurred, or Ideas which were formed *together or in close succession.* **Similarity** associates and recalls Ideas in virtue of their *resemblance* to one another.

* See Hamilton, *Metaphysics*, II., p. 231 ; also Bain, *Mental and Moral Science*, App., p. 92.

The **Laws of Association, with their leading subordinate forms,** may be exhibited as follows :—

Laws of Association, or Principles of Suggestion :—

I. Contiguity, Coadjacency, Vicinity.

(a) Co-existen , o imultaneity, "Ord in :

(1) *Simple co-existences ; e.g.*, associating experiences, such as features in a landscape, or details in a picture or map, because they have been observed together.

The particulars in a conversation we had with a friend, when passing along a road, are often suggested by objects we meet with in going over the ground afterwards.

(2) *Whole and part ; e.g.*, a landscape as a whole suggesting its details one by one ; so also with a flower, and a map ; thus too the leading facts in history suggest minor points ; generalizations suggest the individual points they include.

(3) *Thing and Properties ; e.g.*, snow suggests white, and cold ; ink suggests fluid, black or coloured, used for writing ; *natural objects* generally suggest their properties.

(4) *Sign and Thing signified ;* the most notable case is between words, ideas, and things ; tying a knot in a handkerchief as a reminder is an illustration of another kind ; some forms of mnemonics are also included.

Succession. der in time.

(1) *Simple Succession* (with which, however, some other form of suggestion is almost always connected) ; *e.g.*, mere verbal memory, movements in walking, drill, dancing, playing scales on the piano, when one is thoroughly skilled.

(2) *Means and Ends ; e.g.*, a spade suggesting digging, a pen suggesting writing, &c.

(3) *Cause and Effect ; e.g.*, rain suggesting a flood, a flood suggesting spoiled furniture, drowned cattle, damaged land, &c.

(4) *Premises and Conclusion ; e.g.*, hot winds generally damage fruit trees, a hot wind is blowing now, therefore our apricots are likely to suffer. All triangles have their three interior angles together equal to two right-angles, ABC is a triangle, therefore its three interior angles are together equal to two right-angles.

(Note in 2, 3, 4, the idea of *Similarity* as well as *Contiguity*.)

II. Resemblance, Similarity, (partial) Identity, "Affinity of Thought."

(1) *Partial; e.g.*, Alexander suggesting Cæsar and Napoleon (*conquerors*), a portrait suggesting its original, or a person *resembling* it; one anecdote suggesting another *like* it; words suggesting others of *similar* sound (rhyme); &c.

Different operations of the same Agent; e.g., rivers draining land, and eroding land; *similar operations of different agents; e.g.*, wind and water both changing the land surface.

Simile, *Metaphor*, *Analogy*, *Illustration* in teaching, are additional examples.

(2) *Complete or Absolute; Identity;* exact renewal of a former experience; seeing the *same* thing, repeating the *same* words, &c.

N.B. (1) **Contrast**; *e.g.*, "up" suggesting "down," "black" suggesting "white," "poor" suggesting "rich," &c., is often regarded as an independent and distinct suggestive principle. It is, however, *compound*, and is most nearly connected with Similarity.

(2) *Suggestion is rarely, if ever, simple.* Different forms combine and interact. A thought may be suggested by some form of Contiguity, whereupon Similarity may strike in with a further suggestion; fresh forms of one or other principle may then act, and so on through a long chain of thought. All the modes of Association enumerated above are complex in their action.

(3) Bain considers that *all the higher operations of Intellect, all forms of Thought, are* more or less complicated *cases of Association of Ideas.* The meaning he attaches to the term "Association" is therefore not identical with that usually held. For example, he deals with the processes of Imagination, Creativeness, and Construction, under "*Constructive Association.*"

(4) Some hold *we can attend to only one thing at a time*, others that *we can attend to more than one.* In noticing the form, colour, and odour of the violet, can we attend to the three things at once or no? In comparing two shades of colour, are both perceived simultaneously, or is there a rapid transference and re-transference of Attention from one to the other?

Examples will now be given of the way in which these forms of Association can be applied to our work.

I. *Law of* **Association by Contiguity**, *Coadjacency*, *Vicinity*. Feelings, Actions, and Ideas, which have been experienced, done, or formed, either together or in close succession, tend to cohere.

If one be then reproduced, either actually or in idea, its concomitants are likely to be reproduced or suggested also.*

"When two impressions have been frequently experienced (or even thought of) either simultaneously or in immediate succession, then whenever either of these impressions or the idea of it recurs, it tends to excite the idea of the other."

(The student may compare Hamilton's *Law of Redintegration; Met.*, II. p. 238).

This law of principle is of prime importance in *Memory*, *Habit*, and *Acquirement* generally.

A. **Association of Co-existence** *or Simultaneities.* Pleasurable and painful **experiences connected with persons, places, things, and actions** arise in idea when these persons, &c., are recalled to mind.

Such feelings are associated with *mother*, *schoolmaster*, *home*, *school*, *the family Bible*, *going to London*, *coming late to school*, &c., and form a most important element in moral training and character.

Movements and ideas of movement can be similarly associated.

In standing, speaking, walking, and writing, various muscles act together (and in succession). Learning to stand erect, or to speak, &c., consists in learning to control the muscles concerned in the complex movement, and causing each to act in proper relation to its fellows. When the various muscles have habitually acted together in response to the Will, the separate movements become firmly knit, and we speak, or walk, or write, or stand, because practice has bound the needful simultaneous muscular movements together, and has connected them with the Idea and with the voluntary impulse.

Maps, pictures, and diagrams owe their chief value to the association of other facts with perceived and remembered appearances.

Our recollection of the form of a coast-line often enables us to name in order its capes and openings; each name may then recall the separate pieces of knowledge which go to form our idea of the place named. So also pictures and diagrams not only favour attentive concentration, and

* See Mill, *Logic*, II., p. 501.

therefore vivid Perception, but serve to *localize* facts and Ideas. Visual memory comes in to help; remembering the picture or diagram as a whole and in detail serves to recall Ideas associated with the whole and with the details, and thus favours full recollection.

In using the **black-board** also, visual appearances are associated with facts and Ideas; the associations of sight and visual memory act with and reinforce other forms of Retentiveness.

Whole and Parts. These are mutually suggestive.

When any object arises in idea, our first notion is usually of the thing as a whole, and the indefiniteness of the broad Idea is corrected by thinking of the parts of the object one by one, these parts being suggested in turn by the thing itself. If I think of a *lily*, my first notion is of the flower as a whole, and then of its parts, perianth, stamens with their anthers, and pistil with its details. Our recollections of a *building* start from its general appearance, and details are recalled in turn and in their places. So too with a *map*, and with a *black-board synopsis;* the whole suggests a few main parts, these recall simultaneous parts, and these suggest fuller details. The principle is further exemplified when teachers give a *broad or general outline* of a subject before dealing with it in detail, or when we *dwell on the salient points* in a reign or on any subject, and leave minuter matters to be interpolated afterwards.

Details are best remembered and recalled when grouped, and when a convenient term or key word is attached to the group or whole. The term is then like a label for its bundle, and if we learn carefully what each bundle contains, it is practically sufficient to remember the label. Thus knowledge is methodized, and Memory relieved of an immense strain. The grandest groupings come under Classification and Generalization (Similarity), but some, such as those mentioned in the last paragraph, are on their side quite as important.

From **whole to parts, outline to details, generals to particulars,** is a usual mode of thinking, and a convenient plan in teaching. *The essential point is that the connection between whole and parts be clearly seen.* Completer knowledge of details (parts) will be given progressively as the learner grows in power. The *order should* also *be inverted* from time to time.

Natural Objects appeal to a plurality of perceptivities at once; eyes, ears, muscles, and all the Perceptive organs in all their forms may be engaged.

Our ideas about things are made up of many perceived attributes, discriminated by different acts of Perception, but bound together, existing

together, and cohering in the thing perceived. (**Thing and Properties.**) We observe the form, colour, odour, habit, and other attributes of the *violet* as co-existing in the flower. Other qualities and attributes, not perceived directly by us, are brought under notice in our reading or in conversation, and the whole group of associated simple Ideas makes up our Idea of the flower. The name or word "violet" then suffices to recall the collection of co-existent attributes which were associated with one another and with the name. By far *the greatest part of our knowledge is made up of Ideas thus associated, and connected with names.*

Each form of Perception yields its Idea; all the Percepts can be associated; each additional Percept adds to the completeness of the Idea; the greater the number of associated Percepts the fuller will be our knowledge of an object, and the greater the likelihood of easy and full recall. Obvious practical rules can be drawn by teachers for themselves.

Whole groups of **mnemonic devices** owe their value **to synchronous association**. "**Topical Memory**" depends upon **it. The sign** is associated with the **thing signified** in many ways, *Names, Ideas, and Things* being the most important.

We may be helped in remembering a list of facts by making three or four *dots, or circles, or squares,* and after writing a few facts in each, learning off each set in connection with its own figure. The separate heads of a lesson, and details coming under each, may be recollected by associating each head with some well-known *article of furniture* in the room, and each detail with some part of it. All can be reproduced, if the facts be perfectly associated with one another, and with their mnemonic, or if the associations be firmly knit by repetition and concentrated Attention. Associations may be formed in like manner between *the figures on a clock face* and the twelve months of the year (each figure standing for its month), the twelve Cæsars, the twelve apostles, the twelve minor prophets, &c. The *fingers* may be similarly associated with the names of the ten lost tribes, the ten commandments, or any other collection of ten. A cross or other *mark on paper*, or a *knot in a handkerchief*, or other device is well known as a reminder; we are anxious not to forget something, and we tie a *string round our finger;* we are pretty sure to see or feel the string at the desired time, and it then acts as a remembrancer of that with which we associated it.

One writer proposes to teach the genders of French nouns, first by assuming all nouns to be masculine, and then printing the terminations which usually mark the feminine on various parts of the face and dress of an *oddly drawn female figure.* The *outré* character of the drawing

provokes Attention. Recollection of the terminations will ultimately depend on repeating and attending to the figure until the respective endings are firmly associated with its various parts (**Whole and Parts** in another form); as each part then appears before the Mind, the associated terminations are recalled also.

Advantage has been taken of the principle in another form. The *letters* B, C, I are printed either upon or close to *pictures* of the bee, the sea, and the eye. The picture is recognised, and its name suggested at once; the *sound* of the word then gives the name of the letter. Yet again, *letters* have been worked into *fanciful pictures;* small **m**, for example, has been likened to a railway viaduct with two tall arches, and capital **R** to a whip whose lash had become twisted round the middle of the handle, &c. By frequent repetition the name and form of the letter become closely associated in the child's mind; the picture would be used whenever there was a difficulty in the immediate recall, but it would drop gradually out of use as the association became firm. (Note that Similarity as well as Contiguity is distinctly involved in this case.)

Mnemonic words have been employed in many ways as aids to Memory. Dates and collections of facts can be recalled to mind when they have been associated with the letters of a remembered word. (The most famous set of mnemonic words is connected with the valid moods of the Syllogism in Logic. The initial consonants, the vowels, and certain other consonants in the words are associated with definite ideas and processes; they indicate to the student how the Syllogism is to be reduced to another form) *

The *fundamental idea in all these plans* of mnemonics is to fix upon an object or word which is more striking or more easily remembered and recalled to mind than the facts, &c., we wish to remember and recall. Each fact is then associated with the object, or with part of it, and the mnemonic is valuable according to its own obviousness, and the completeness of the association. Whether it is worth while to resort to such devices, except in special cases, may be doubted; learning to use the mnemonic may really involve as much trouble as learning the facts themselves.

B. *Contiguous Association of Successions*, **Associated Sequences.**

Rote-learning, pure and simple, exemplifies the action of **Simple Succession.**

Children may learn off and repeat extracts, strings of facts and dates, tables, &c., even if the words convey (little or) no meaning to them. One *sound* has been frequently repeated immediately after another; definite successive vocal *movements* have been often made in the same

* Jevons, *Elementary Lessons in Logic*, p. 145.

order; the result is that *each sound and each movement is suggested by its antecedent, and that it in turn suggests its follower*, and the whole sequence is thus worked out.

We treat pure rote-learning as a case of succession of associated *sounds* and associated *movements*, as it is in the main. Observe, however, that each form of association (sound and movement) helps in recovering both; the association is compound. A degree of *comprehension* is pretty sure to come in also, and give its higher intellectual help.

Learning by heart involves (1) *mastering each point separately*, and (2) *connecting each point* by repetition and concentration *with that preceding it and that following it*. If what is learned be *understood*, *i.e.*, if more intellectual forms of association be brought to bear, acquirement is more rapid and enduring.

Teachers know that it is *possible to secure adhesiveness by much repetition in the same order*. Mere *verbal memory is a possibility* also. *Power to repeat orally is no guarantee that the pupil understands* what he says. This *mean form of Mind exercise soon becomes tedious* and productive of disgust.

Sequential **movements** afford another example.

When a pianist runs up the scales, or a soldier goes through his drill, or an accomplished dancer executes movements, or a skilled mechanic uses his tools, or an advanced pupil performs certain school exercises or does certain schoolwork, there is in every case a succession of movements connected with an idea of the object or end aimed at by the movements. All these are so firmly bound together, that if the first movement be voluntarily made, the others follow almost irrespective of the Will.

The formation of **Habits** depends chiefly on the principle.

If we have accustomed ourselves to do things in a certain order, doing one suggests the next, and we carry out the entire course, it may be, almost unconsciously. This is abundantly exemplified in the routine of daily life; rising at a certain time, meals at the same hour, catching the same train for business, and so on. We may even be made uncomfortable if some habitual act (often trivial) be omitted or done out of its order.

Teachers cannot be too strongly impressed with the *importance of intelligent regularity* as a factor in education.

When one Idea *follows as a consequence* from some other, the association is of a higher intellectual type. **Means and Ends, Cause and Effect** are thus associated.

Rules and *directions for doing things* or *regulating conduct* are valuable on this account. When the connection (association) between End and Means is clearly perceived, the mental effect is best.

We notice the position and direction of the mountain ranges, and the general surface configuration of a country; we can then understand *why* lakes should be situated where they are, and *why* the rivers should run in their particular course. So the climate and soil of a country can be associated with its natural productions, and with the character and pursuits of its people. History abounds with opportunity for establishing connections on this principle, and, indeed, there are few subjects in which it may not be brought in more or less frequently. Above all, making *conduct* appear to be *the cause of pleasure and pain*, or making *happiness and discomfort* seem to be *the consequence* of good or bad action, is to be constantly aimed at.

Experiments often exercise a powerful influence, partly because the effect is seen to follow from (and is associated with) the means employed. Other influences act too, Curiosity, and Complacency arising from our power to produce the result.

Structure and Function should be connected in lessons on animals, machinery, and physiology. *Uses* should be shown in connection with *plan* or conformation; *how* and *why* should be associated; the *way to do a thing* should be shown in connection with the *object to be achieved;* the structure and fitness of an apparatus or means, and the mode in which the whole and in which each part works should be associated with what it has to do as a whole, or in part.

Premisses and Conclusion come in also; *because* certain premisses are accepted, *therefore* certain conclusions follow.

Ideas thus connected, as in Euclid, and in (Inductive and especially Deductive) Reasoning generally, cohere very firmly, and are mutually suggestive in a high degree.

II. *Association by* **Similarity. Associated Resemblances** *or Similarities.* "Like suggests like." "*Present* Actions, Sensations, Thoughts, or Emotions tend to revive their *Like* among previously occurring states."*

Doing something now may recall my doing a *similar* thing years ago; a present *feeling* brings to remembrance a *like* feeling experienced long before. I am reminded of a friend in England by meeting a *man like him*

* Bain, *Mental and Moral Science*, p. 127; also *Senses and Intellect*, p. 457.

in Australia; the hop-gardens at Healesville recall *similar gardens* at Farnham, Sevenoaks, and elsewhere; a teacher's style of handling a class in one school brings to mind the methods of other teachers who acted *similarly* in other places, and so on.

Bain remarks that whilst *the facts of Retentiveness*, with few exceptions, *are included under Contiguity*, and whilst *Habit depends mainly upon it*, *Similarity is of most importance in Reasoning* and in *generalized* knowledge.*

Bain regards all the higher operations of Intellect as more or less complicated forms of Association of Ideas. In this he departs from the usual practice.

Abstraction, *Classification*, *Generalization*, and *Reasoning* depend on or are influenced by Similarity.

The *impediments to* sure *revival* through Similarity are twofold.†

(1) *Faintness.* Unless the original impress with its Idea be definite and distinct, it cannot serve as a rallying point for Ideas which resemble it.

(2) *Diversity.* If the points of Similarity be overlaid by, or intermixed with points of Difference, the latter may overcome the former, or may so obscure it, that the Similarity may not be detected; it could not then serve as a point for Association to act upon.

Minds differ, naturally and by education, in their power to detect Similarities in things which are different.

Rules might be introduced here; the chief thing, however, is evident—*Secure clear Perception*, see that *definite Ideas* are formed; try to get *each Idea distinct, connected, but not muddled up with others.* It will often be necessary to clear the way, to remove obstructing Ideas, to put learners on a clearer track, and, it may be, to show or go with them on the road.

If resemblance can be detected between separate facts or experiences, such *resemblance helps to bind the facts together, and to arrange and fix them in the Memory.*

Illustrations. Visual appearance. Similarities apparent to the eye are extremely numerous, and can be multiplied readily by Imagination.

A *portrait* recalls its original, and perhaps other people like him; *pictures* suggest the scenes they represent, and may start trains of thought as well as recall similar scenes.

* See Bain, *Mental and Moral Science*, p. 143, &c.

Letters are often *likened* to (and associated with) common objects in teaching young children. Italy is said to *resemble* a boot, the Black Sea a shoe, England a triangle, parts of a coast-line a man's features, and so on in Geography. Experienced teachers know that much is gained in clearness and in retention when they can point out such resemblances; a boy would be helped in drawing a map of Italy from memory, if he had previously noted (1) the *resemblance* of the outline to a boot, and (2) points where the resemblance did not hold, or where the coast-line *differed* from the object. Other possible applications are numerous.

Dates may frequently be associated by Similarity.

1588, 1688;—1215, 1415, 1715, 1815;—1314, 1415, will serve as examples.

Rhyme. The sound at the end of a line suggests the *similar* sound later on, and thus aids recall of the words connected with the second sound.

Rhyming verses are learned more easily than blank-verse or prose; attempts are therefore made sometimes to teach leading facts of History in rhyming lines.

Rhythm, the regular succession of *similar* accent in poetry, is a further help to Memory.

Classification and **Generalization** depend on Similarity.

(More will be said about this later on; see pp. 512-513.)

Entertaining and useful lessons in actual Classification can come into school-work.

For example, with a selected bunch of flowers, the teacher could enable the pupils to distinguish the floral whorls, calyx, corolla, stamens, and pistil. They could then be *led to classify* the flowers, or put each flower into one of three classes at first, according to the relative position and cohesion of the petals. *Names* (Corollifloræ, Calycifloræ, Thalamifloræ) *could then be given* to each class, and other flowers referred to their place in the scheme. Animals, shells, minerals may be dealt with on a modification of the same plan. It is worth noting that *Observation, seeing differences, Discrimination, is cultivated at the same time as Classification, Generalizing, and perceiving points of Agreement.* "To be accustomed to watch for curious objects, to know in a moment when you have come upon anything new—which is Observation." "To be quick at seeing when things are like, and when unlike—which is Classification."*

* C. Kingsley, *Life*, II., 147 (Lecture at Wellington College).

The whole complexion of our knowledge may be altered by grasping some new generalization, when facts hitherto regarded as distinct are seen to *resemble* one another.

Take, for example, the new view of nature which ensues when we first understand the chemical process involved in burning a candle or a lump of coal, when we learn that *matter cannot be created or destroyed*, though it may be *transformed* by the chemical force. So is it also with the student of botany, when he sees the force of the statement that *all the organs of a flower are only modified leaves*. A corresponding enlargement of view occurs frequently when a subject is intelligently studied.

Further, whenever several facts, previously isolated in the Mind, are seen to resemble one another in some essential particular, there is *a flash of intellectual gratification* in perceiving the Similarity, in the felt increase of mental grasp, and because of the greater ease with which all can be stored.

The writer recollects the pleasurable excitement when he first grouped for himself the usual methods, and saw a common plan for obtaining the three ordinary halogens; so also with the chief hydracids, and the action of acids on metallic hydrates. All of us have experienced like gratification, though not perhaps over the same generalizations.

Similar pleasure is felt by the schoolboy who discovers a rule from the examination of examples, or who detects an essential Similarity underlying the evident diversities in the examples.

Rules in their making and their application depend on Similarity.

Rules are made to cover *similar* cases. So far as conduct is governed by rule, the principle holds; conduct *like* this is enjoined, conduct *like* that disallowed.

Applying a rule in Arithmetic depends on perceiving that the new case is *like* old ones in essential points, and is therefore to be dealt with in the same way. In Grammar also, a word is seen to occupy a *similar* relation in a sentence to that occupied by a word formerly dealt with, therefore it is in the same case, or it is the same part of speech, and so on.

Memory for **lists of names** is helped when the names are grouped according to some perceived Similarity.

The fifteen non-metallic elements are easily memorized on the following plan.

(*a*)	*gases*—"*gen*"	O, H, N.
(*b*)	*halogens* - -	Cl, Br, I, F.
(*c*)	- - "*on*"	C, B, Si.
(*d*)	two *s*'*s* and *t*	S, Se, T.
(*e*)	- - - - - -	As, P.

Nor is it difficult to learn the order of the books of the Old Testament, if they are grouped under Pentateuch, Historical, Poetical, and Prophetical writings, and if subdivisions are employed for historical and prophetical books. In like manner the sovereigns of England can be more easily committed to memory if they are grouped as Norman, Plantagenet, &c.

Many **key-words and mnemonic devices** depend on Similarity.

The letters of an easily remembered word may be the same as the initial letters of words more difficult. For example, a clergyman at a distribution of prizes tried to fix the names of certain moral desiderata thus :—

P - - -	Punctuality.
R - - -	Regularity.
I - - -	Industry.
Z - - -	Zeal.
E - - -	Excellence.

Some beginners in physiology have confounded the terms Clavicle and Scapula, and have been helped out of their difficulty by noting Collar-bone or Clavicle (initial letter C), and Shoulder-blade or Scapula (initial letter S).

The well-known mnemonic, "*Face*," gives the English letter-names of the notes occupying the spaces in the treble stave in ascending order.

Mnemonics in various forms have been almost developed into a science ; it does not seem likely, however, that they will be extensively used in schools.

Similarity is of the first importance in **illustrating.** Clear Ideas about abstract or unknown things are given by showing how they resemble (and differ from) things present and familiar. *Illustrative comparison* is a comprehensive device in teaching.

Whenever a difficulty has to be cleared up, teachers should set themselves to discover some easy or well-known case of *Similarity*, and explain the former by the latter. If anything strange or unfamiliar is met with, think what common and familiar example is *like* it, and use the well-known to explain the difficult. Much of the teacher's power will depend on his aptitude for seeing resemblances, and his habit of bringing common things to bear on what has to be explained.

Parable, Allegory, Simile, Metaphor, Analogy, illustrative **Anecdote** are varied forms of appeal to Similarity.

Parable and *Allegory* can scarcely be regarded as expedients in ordinary teaching, though we meet with, and are called on to explain New Testament parables in Scripture lessons, and, perhaps, Bunyan's *Pilgrim's Progress*, or Addison's *Vision of Mirza*, at other times.

A *Simile* is a sentence expressing a similarity of relations.* "*As* a lamb before her shearers is dumb, *so* He opened not His mouth." (*Compare use of "like," "as," "so."*)

Metaphor is "compressed Simile," a similitude "expressed without the signs of comparison;" *i.e.*, without the "*as*," and "*so*." (The resemblance is stated in Simile, but implied in Metaphor.) He *bridles* his tongue—Attila was the *scourge of God*—a *lion-hearted* king—a *blood-thirsty* tyrant, are examples of metaphor. Both simile and metaphor may be occasionally used; metaphorical epithets often serve as striking summaries, or help to call attention to remarkable features in a telling way; but their employment is limited in the main to adding strength and clearness to literary composition. Yet metaphor, though an *ornament* of style in the main, *may be an aid to perspicuity;* it is "usually much easier for uncultivated minds to comprehend a similitude or analogy, than an abstract term."†

Analogy is the similarity of *relations* or ratio, not between things themselves. It owes its force to Similarity; the closer the relation the stronger the Analogy.

Anecdote is known to be the best mode of illustration in some cases. In inculcating moral precepts especially, showing a desirable or undesirable trait, as it really exists in boy life, is a forcible mode of teaching; a *well-fitting and well-told* anecdote is almost always effective.

If any of these forms are introduced, let them be *well used. This is equivalent to thinking them carefully out beforehand.* Illustrations of various kinds do occur to us frequently during the excitement and heightened energy of giving a lesson, and not a few of these sparks from the anvil come in splendidly. But many which seem apt, simple, and spontaneous are the result of cogitation, preparation, and sympathy; indeed, these only can be fully relied on.

Identity, or *Complete Similarity*, doing the same thing again, repeating a former experience of whatever kind exactly.

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* *English Lessons for English People*, Abbott and Seeley.

† Whately, *Rhetoric*, ch. III.

This is exemplified in school-work by the much-used device of Repetition, as in tables, learning dates and rules, and drill. Repeating the same words or actions *renews and deepens an impress* formerly made, and *re-forms and defines* any shaping which has been given to an Idea or acquirement.

Contrast is often regarded as an *independent* principle of Association.

Bain, however, considers Contrast to be a form of *Compound* Association, in which Relativity, Contiguity, and Similarity are involved.

Contrast is sometimes considered to be a special form of *Similarity;* some grounds for this view are mentioned below.

Relativity.

The "*Law of Relativity,*" as Bain holds, expresses the fundamental property of Discrimination. All Perception and all knowledge is relative; "there can be no single or absolute cognition." Every Percept, and everything known is perceived and known in relation to or in contrast with something else. *White things* could not be discriminated unless they were differentiated from *things not white;* perceiving *whiteness* involves perceiving *non-whiteness* also; both are involved in the same mental act; knowing what a thing *is* involves knowing what it *is not;* "the knowledge of contraries is one;" every positive is known in connection with its opposite or contrasted negative.

Mill writes "that we only know anything as distinguished from something else; that all consciousness is of difference; that two objects are the smallest number required to constitute consciousness; that a thing is only seen to be what it is by contrast with what it is not."

Hamilton uses the term in a different and wider sense at times.

Note that Relativity is essential to the Idea conveyed by many terms; *e.g.*, *husband* (wife), *parent* (child), *ruler* (subject), &c. Any such term *suggests its correlative* at once.

Contiguity and Contrast. Many *contrasted experiences are habitually coupled* together in ordinary speech.

Black and white, up and down, light and darkness, pleasure and pain, are constantly used thus. Words and Ideas so conjoined are mutually suggestive in accordance with the Law of Contiguity.

Similarity and Contrast. In pure Contrast the *contrasted*

things have something in common, in virtue of which they are contrasted; there is "*Similarity in Diversity.*" "*Contraries imply community of kind.*"

Black and white are contrasted because of the absence and presence of colour, *up and down* in virtue of position, *happiness and misery* on the ground of feeling, and so on; we cannot contrast *happiness* with *up* or *down*, or with *black* or *white.*

For this reason Contrast is regarded as a special case of Similarity.

Two important practical conclusions can be drawn by teachers.

(1) Inasmuch as Association by Contrast depends on the opposites having frequently been in the Mind in conjunction, the teacher can aid Association by bringing these opposing pairs to the front frequently, or by using one member to fix the other. Words and things may be well taught and looked at *in pairs.* (2) On the doctrine of Relativity, as taught by Bain and Mill, *two* things at least enter into every clear Perception. *Teach these two*, or else either will be imperfectly taught. As indistinct positive knowledge about a thing is often owing to indistinct knowledge or Perception of the corresponding negative, *use one to give clearness to the other.* Contrasting *wrong with right* is a sound device, not only in correcting faults, but in teaching everything from morality downwards. Let children see what *straight* means, not only by telling them and showing them, but by drawing *curved* and *crooked* lines, and by *bending* a stick. Help them to form a clear idea of a *square*, not only by showing them a square, and giving them a definition, and pointing out wherein the figure agrees with the definition, but by introducing other four-sided figures which are *not squares*, the oblong, rhombus, trapezoid, and trapezium, and causing them to see wherein the square differs from these.

Compound Association. Contiguity and Similarity have been dealt with so far, chiefly as though each acted alone; this does not represent the ordinary action of Association. Different forms work together; all Association is more or less complex.

A few examples will help to show this, though careful consideration of those already given would almost suffice.

Recollection of Poetry is brought about partly by simple memory for words (*Coadjacency*), partly by rhythm and rhyme (*Similarity*), but chiefly through perception of the *meaning* (higher *Intellectual* associations); the *thought* suggests the *words* which have been associated with it.

Ideas about a historical period are made up partly of memory for dates (*Contiguity*, though *Similarity* often helps) coupled with many

subordinate facts and fragments of information which *Imagination* constructs from, and which are made into mind-pictures, and interwoven into connected sequence. *Cause and effect* are important; certain acts have their *reasons*, and are followed by *results* that might be expected. Character in the monarch and in leading men has its influence; the general condition of the people can be taken into account; altogether, the intellectual processes and the associations connected with the Idea are numerous and complicated.

Comparing things, places, persons, *e.g.*, the water-system of North and South America. The position of the main range in each continent might come first, and the essential *Similarity* dwelt on; whence the general direction of the main streams might be inferred (*Cause and Effect*). Points of *difference* and their *consequences* might be noticed at will. The ridge of elevated land crossing each continent would be pointed out (*Similarity*), making a slope to North and to South. Subordinate modifying circumstances, mountains of Guiana, Alleghany mountains, and the like, should be noticed, and points of *resemblance* and *difference* examined. The learner is now ready to notice that large streams in each continent *correspond;* after naming these, the *reasons* why there should be this correspondence are associated with the fact of *similarity*. The chains of lakes in North America should be *contrasted* with the opposite condition in South America. Other points of *Similarity* and *Difference* may be freely brought in, and some approach to *scientific* value may be fairly claimed for such a lesson. Many forms of intellectual action, and as many modes of Association are involved.

Recollecting a proposition in Euclid involves memory for *contiguous* words, &c., but especially an *intellectual* apprehension of the *meaning* of the proposition. Then there is noting the adaptation of *means to ends*, and observing how each *part* fits into or makes for the *whole;* this again helps to recall each step of the proof at the proper time.

The associations of the mathematician are often highly intellectual as well as complex. A student who goes through Euclid I. 5, must first get an idea about an isosceles triangle and the points to be proved about it; this helps him to the construction, and to recollecting the diagram afterwards. The steps in the proof are partly associated by *sequence*, but mainly as *means to ends*, *premisses and conclusion*, "*because*" *and* "*therefore*." Each main step is dealt with in turn, and the conclusions drawn from it set aside; these conclusions themselves are then taken up, and finally the proposition is *proved*.

Associations of different kinds **combine** *their force and become* **mutually helpful.**

In learning by heart, eye, ear, and vocal organs, as well as higher

intellect, may be engaged. Associations of sight, sound, muscular movement, and understanding are formed together, and *each set helps the others.* Many can learn quicker if they speak aloud as they learn, because sound aids sight, the ear helps the eye. Even if speaking aloud is forbidden, learners will often con over their lessons in an inaudible whisper, finding that moving the lips as they would do in speaking helps them to learn; muscular movement helps the eye.

Enlist as many forms of faculty as are available, forge as many links of Association as you can, appeal to eye, ear, voice, Imagination, Reason, in varied ways when you wish to fix an Idea.

Obstructive Association. *It is more difficult to unlearn than to learn.* Ideas once associated are separated with difficulty. Where faulty or incorrect notions have been formed, the wrong Idea often persists in obtruding itself in spite of our wish.

We may try to recall a word or a person's name whilst we have an erroneous idea about the first syllable. The false notion may enable us to recall word after word beginning with that syllable, but it prevents the word we seek from pushing its way through.

Or we may inadvertently associate a wrong date or person with a fact, or perhaps mis-spell a word which is rarely used. After a time we discover our mistake; possibly the shock of surprise may be sufficient to fix the correct form, but the error is often obstinate, and removable only after long forcing one's-self to the right.

The great *practical inference* is obvious: *endeavour to prevent children from forming any but correct Ideas.*

The Elaborative Faculty.

The Elaborative Faculty is the faculty of **Thought** proper, to which all other forms of mental faculty are subservient. It is also termed the *faculty of Relations*, or of **Comparison.**

"Intellectual phenomena may be regarded as the result, partly of (1) Perception [Presentation], partly of (2) Imagination [Re-presentation], partly of (3) Comparison, Reflection, or Thought."

"The act of making Comparisons, and of apprehending Similarities and Differences, is usually called Thought or Thinking, and the results at which it arrives Thought or Thoughts."*

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* Fowler, *Ded. Logic*, Introd.

"Comparison is at work in every—the simplest act of Mind.—Every operation is only an evolution of the same elementary process,—there is a difference in the complexity, none in the nature of the act. In short, the various products of Analysis and Synthesis, of Abstraction and Generalization, are all merely results of Comparison, and the operations of Conception Judgment, and Reasoning are all only acts of Comparison in various applications and degrees."*

The **Products of Thought, Concepts, Judgments, Reasonings**, result from Comparison.

In forming a *Concept*, things are compared; in arriving at a *Judgment*, Ideas, Concepts, or Notions are compared; in *Reasoning*, judgments are compared.

Conception properly means taking several things together (Lat, *concipio*), noting their essential attributes, and constructing a "**General Notion**" out of these attributes alone.

This general notion is a **Concept**, or *Conception*, or *General Idea*. It would be well to let Conception denote the mental act, and Concept that which is conceived.†

Essential attributes belong to a thing of necessity; without them it could not be that thing at all. Thus *four-sided*, *equilateral*, *equiangular*, *rectangular*, are essential attributes of a *square*, as distinguished from *large*, *small*, *coloured*, and such like accidental or non-essential attributes.

Formation of Concepts. (1) Observation (Perception) of separate things, and Reflection upon their points of agreement and difference (**Comparison**) often enables us to identify some *one feature*, or some *aggregate of properties* which they have in common.

The things in which such common character, or common aggregate of characters are observed, constitute a **Class**. Planets differ in size, colour, and rate of movement, but they agree in being spherical, shining by reflected light, and moving in broad ellipses round the sun. In virtue of these agreements, they are grouped together or put into a separate class amongst the heavenly bodies.

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* Hamilton, *Met.*, II., p. 279.

† See Hamilton, *Logic*, I., pp. 41, 42.

(2) **Abstraction** consists in drawing off the Attention from points of difference, and concentrating it on a point, or on an aggregate of points, of agreement in different objects. It is "the seizing and marking the common feature as a distinct subject of thought."* "To abstract is to separate the qualities common to the group from the peculiarities of the individual." (*Jevons.*) This is the most difficult part, and sometimes gives its name to the whole process.

Exs. (*a*) An oak, a pine, a rose-bush, and a blade of grass differ in size, habit, and many things, but they agree in being *green*. The Mind can seize and dwell on this common character, *greenness*, and refuse to attend to points of dissimilarity.

(*b*) Rivers differ from one another in length, width, rapidity, clearness, height of banks, character of country they flow through, &c., but they agree in being natural streams of water, of a certain size, and perennial in their flow.

(3) **Generalization and Denomination.** The common attribute, or aggregate of common attributes bound together by mental synthesis, or so embodied that the Mind can deal with it to the neglect of differences, is called the **Abstract Idea**, the **Generalized Notion**, or the **Concept.**†

When the Concept has been formed, we give it a **Name**, which fixes it and often stands instead of it for us in future. **Denomination** consists in imposing a general or common name, which shall serve as a sign for a genus or class, and as a means of recalling its associated Concept.

Generalization consists in "recognizing a class of things, each of which is found to possess the common quality or qualities," and in "comprehending under a common name, several individuals, which agree in possessing the attributes connoted by the name."

Concepts are thus mental constructions, and *mental entities only;* there is nothing exactly answering to them in Nature. They always represent

* Bain, *Senses and Int.*, p. 511.

† See Bain, *Mental and Moral Science*, p. 143.

fewer attributes than the aggregate attributes possessed by the objects from which they are formed.*

"*A Name* is a word or a set of words taken at pleasure to serve as a mark, (1) which may raise in our mind a thought like to some thought we had before, and (2) which being pronounced to others may be to them a sign of what thought the speaker had before in his mind."†

Hamilton writes:—

Abstract General Notions are formed, "when, comparing a number of objects, we seize on their resemblances; when we concentrate our Attention on these points of similarity, thus abstracting the Mind from a consideration of their differences; and when we give a name to our notion of that circumstance or aggregate of circumstances in which they agree."‡

All general or common names are based on Abstraction, and so far *are abstract.*

J. S. Mill held that "abstract" should be applied to qualities only. He opposed *concrete* (tree) to *abstract* (greenness).

The process described seems roundabout and complicated, yet it represents the natural way in which children form notions about classes of things, and about the meaning of common nouns or general names.

The Mind begins to act very early; the child lays up a stock of words associated with notions about things, as soon as, or even before he can speak. First notions are modified by later perceptions, arising from more extended contact with things, and as words are found to be used with various or different meanings; Concepts alter as experience grows.

Perfection and Imperfection of Concepts. We are indebted to Leibnitz for the following table.§ "Perfect knowledge is clear, distinct, adequate, and intuitive."‖

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* The nature of General Notions, what they really are, has been, and is a subject of much controversy. See *Laws of Thought*, sect. 62.

† Hobbes, quoted by Mill, *Logic*, I., ch. ii.

‡ *Met.*, II., p. 288.

§ See Thomson, *Laws of Thought;* Jevons, *Ely. Less. on Logic*, chap vii.; Hamilton, *Logic*, IX. X.

‖ Jevons, *Logic*, p. 54. This section is based largely on Lesson VII.

Concepts are { *clear* / obscure } { *Distinct* / Confused } { *Adequate* / Inadequate } { *Intuitive*. / Symbolical.

Clearness. Our notion or knowledge of a thing is *clear* when we can recognise and distinguish it with certainty from all other things. "A Concept is *clear*, when we are able to recognise it as different from other Concepts *

We may have a *clear* knowledge of a *person's face*, so as to be able to recognise him at once, without having a minute knowledge of his separate features. Our Concepts of *horse*, *cow*, *tree*, *water*, &c., are similarly *clear*.

Distinctness depends on ability to discriminate the *constituent parts* of objects, and of Concepts.

Our Notion of a *plant* is *distinct*, when we clearly perceive its roots, stem, leaves, flowers, with their parts. Our Notions of *geometrical figures* can easily be made distinct. Not so, however, with our Notions of *municipal institutions*, or of *civilization*. We have *clear* Notions of *red* and *blue*, for we can distinguish and identify them at once, but our Notions are not *distinct* because we cannot analyse them into simpler parts.

Indistinctness is to be constantly watched for, and warred against; it readily passes over to absolute faultiness or inaccuracy.

Adequacy. When our analysis, and our knowledge of the parts is pushed to the furthest possible point, or *when we know all that can be known* about a thing, our notion is *adequate.*

This point cannot be absolutely reached. Knowledge may, for practical purposes, be regarded as adequate, when the analysis has been pushed far enough for the end in view.

Insufficiency or incompleteness in Concepts is a common and serious evil. It is often joined to indistinctness. On these two points, indeed, the teacher's difficulties with *names* mostly turn.

Intuitive and Symbolical Knowledge. The meaning can be best shown from examples.

Our Notions of a *triangle*, or of *red*, are clear and complete; such knowledge is *Intuitive.* But where a Notion is very complex, where we cannot at once recall all that the name stands for (as of *wisdom, justice, chiliahedron*),

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* Hamilton, *Logic*, IX.

we make the name stand for them all, we use it as a *Symbol* for what we do not adequately realize; the name has a *mechanical* use.

Unfamiliar words must be symbolic. *Very large numbers*, such as millions, are symbolic in the main, we cannot actually realize them; *algebra* is eminently symbolic, we deal with the symbols, seldom stopping to consider the general truths they symbolize. *Geometry*, on the other hand, is often *seen* to be true from an inspection of the figure, especially if it be dissected, and then pieced together again.

Symbolical knowledge in the form of rules, definitions, and general terms, is compact and easily remembered. It shortens thinking by enabling us to substitute a short symbol (term) for a long expression. *Intuitive* knowledge, consisting of what we really see and know, furnishes us with absolute facts.

The difficulty and danger for teachers, is the liability to accept the symbol for the deeper reality from their scholars, and teachers use words themselves which have too much of the symbolic element in them for the children. Generalized knowledge and symbolical terms must be dealt with, but a great aim, especially with younger children, should be trying to give an Intuitive character to teaching. *Objective example*, *illustration*, and *explanation* are our chief reliance here.

Simple, Easy; Complex, Difficult. These words are used in different senses.

(1) *According to the Mental Faculties chiefly engaged.*

Perceiving objects, *Sense-Perception*, is easier, or makes less intellectual demand than the storing, reproducing, re-presenting, and rearranging Percepts which *Imagination* requires. Bringing *Abstraction* to bear, and getting at the products of Thought proper,—Concepts, Judgments, Reasonings—is much more difficult still.

(2) *According to the Logical simplicity*, or small Intension of a term.

Here Abstraction is carried to a high pitch; this form of "simplicity" is reached only by an exacting and difficult mental process. The higher the Abstraction, the greater is the Logical simplicity, but the longer and more troublesome is the way to it.

Two special forms of **Easy to difficult** have to be mentioned.

Note. Each is a perfect division, yet they are not opposed.

I. Simple to Complex, as exemplified in good Synthetic teaching.

The broad rule is,—Let *details* be *clear and well known;* have them *pieced together carefully and firmly according to plan;* the details are to be mastered and put together under the teacher's direction and guidance.

Instances of the way in which the Synthetic Method can be used in Collective lessons, and various subjects, can be found in the section on "Method."

II. Concrete to Abstract, from perceiving *Things* to elaborating *Thoughts.*

Forming Concepts and attaching Names to them is the simplest effort of pure Abstraction. This is, in practice, what we mean by *getting children to form correct ideas about the meaning of general terms,* especially of new words, *e.g., mountain, continent, precipice, circle, regiment, monarch, honesty, duty.*

There is a higher stage, reached by collecting, examining, and arranging examples, noting agreements, laying aside differences, and expressing the essential agreement in a *Definition* or *Rule.* Instances are frequent in the section on Method, under the headings of *Inductive Teaching, Telling and Eliciting, Arithmetic, &c.*

Power to take children through such mental work, i.e., to get the *children* to go through it, *marks an able teacher.*

The broad method is :—(*a*) *Examples, selected, arranged,* reasonably *abundant.* "For a general or abstract notion, the essential preparation is in the particulars."* Examples should be *varied,* but disparity should not be obtrusive. *Arrange, compare, contrast,* to make agreements and differences easily discernible.

(*b*) When children get a glimpse of the fundamental agreement (meaning, definition, rule), the *pleasurable* "*shock of identity in diversity*" comes into play, and interests the learner. If a rule is seen to summarize and include many diverse cases, a degree of intellectual elation accompanies the discovery. Tracing *cause and effect* is another course of intellectual pleasure.

(*c*) *Naming, definition,* "*putting the General Notion into words*" follows; this gives precision, and stands for a summary and symbol for the future.

Teachers often use their liberty, and invert this order. (*a*) Begin with *definitions.* (*b*) *Illustrate* them, or make them clear by *examples, i.e.,* use the deductive method.

With advanced scholars especially, this plan is effective enough.

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* Bain, *Education as a Science.*

Training the Conceptive Faculty. (1) Consists in *exercising it duly*, on suitable material, and in a proper way.

This is but a restatement of the general law.

(2) With rational modifications and adaptations, what has just been said about the *progress from Concrete to Abstract* covers the ground.

(3) Forming Concepts, and attaching general Names to them, *begins early*, and goes on briskly during childhood.

Observe in this, that progress is from vague and indefinite to definite. Words are attached at first to hazy, imperfect, and probably incorrect Concepts. This first meaning is modified and re-modified again and again, experience of the use of the word, and larger acquaintance with things, bringing about the change. Pruning and shaping go on often for a long time, before definiteness is reached.

(4) *Teachers can help* in classifying, and can do much to systematize, the workings of the faculty.

The broad principles on which to proceed have been specified under progress "from Concrete to Abstract."

Opportunity for putting the principles into practice is afforded by every lesson more or less. Comparison, Classification, and perhaps higher work may come in. What was said about subjects suited for cultivating the Perceptive Faculty, may be read from this point of view also. Object lessons, Kindergarten exercises, and lessons on Form and Colour afford splendid scope to the teacher.

Do not be in a hurry; do not attempt too much, nor force things on before their natural time.

Perception and Percepts before Conception and Concepts. Lay in an abundant supply of raw material in young children, good, clear, and firmly fixed, for higher forms of Mind to work on in due time. Yet the Conceptive Faculty may and should be set in action early, if exercises be graduated or adapted to its strength; and as power comes, abundant and greatly varied work can be found for it.

Judgment is a term which is variously used.

(1) (*a*) **Judgment** is the *faculty* by which the Mind not only perceives two objects, or apprehends two Ideas, but pronounces in itself whether they agree or differ.

(*b*) **Judgment** is the *exercise* of this faculty, or the *act* of comparing two objects, two Notions, or something with a Re-presentation, and then pronouncing mentally on their agreement or difference.

(*c*) A **Judgment** (Proposition) is the *expression of the result* of such an act *in words*.

The word is used in all these senses by writers on Logic.

(2) In ordinary language, people are said to **use their Judgment,** when, after thinking about a subject in all its bearings, so far as they perceive them, they come to a decision upon it.

Thus considered, Judgment is a complicated affair, and so far from being a simple faculty of the Mind, involves the active exercise and co-operation of all the mental powers.

Comparison and *Deciding* are regarded as the essential points in using the Judgment.

Both are involved, from the simplest to the most advanced forms of judging. Observe once more, that the essence of Comparison is the detection of differences and agreements, and of apprehending similarities and differences.

"The simple act of understanding the sense intended to be conveyed by any assertion, whether affirmative or negative, is the office of *Apprehension* (Perception in wide sense, Understanding). The acquiescence or non-acquiescence of the mind in that assertion is an exercise of *Judgment.*"

(3) There is a technical employment of the term, which makes it equivalent to **Comprehension** or **Understanding**, as opposed to, or contrasted with merely *remembering*.

It would be well to use these words instead of *Judgment* in this case.*

Training the Judgment. (1) *Exercise* it well.

(2) Judgment is *liable to defect, and to mistake.*

Imperfect knowledge is the leading source of erroneous Judgments; *faulty observation*, followed of necessity by corresponding *inadequate re-presentation*, prevents us from comparing objects or re-presentations fairly, and, therefore, from arriving at sound Judgments. *Hurry* or *impatience*

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* See Bain, *Education as a Science*, p. 124.

often induce us to go on, without taking due account of all the circumstances; *rash* Judgment follows. *Feeling, passion, hope, fear, prejudice, faulty habits of thought*, formed it may be, under the influence and authority of others, tend to warp the Judgment.

Inaccurate or imperfect knowledge is pretty sure to lead one's Judgment astray; *defective* Judgment is a near neighbour to *wrong* Judgment.

(3) Judgment deals with *Presentations* (Perception), *Re-presentations* (Re-presentative Faculty), and *General Notions* (Conception —Elaborative Faculty). At the best, therefore, Judgment can be complete and reliable, only so far as its materials are trustworthy.

Once more we are brought face to face with the fundamental rule; *train the Perceptive Faculty well.* Clear, distinct, adequate Percepts may be followed by Re-presentations, and then by Concepts, having the same desirable qualities; Judgment can then begin its work on a sound foundation.

Later Mind exercise *may* be defective, even if immediate Perception be good, because of faulty Memory, &c., but it *must* be defective, unless Perception, on which all later Mind action depends more or less directly, performs its office duly.

(4) Children begin to use their Judgment early, but a child should never be treated as though its Judgment were mature.

In simple cases, children's Judgment may be called into play; indeed, it is developed by being properly used. But we ought not to expect mature Judgments from children, nor to be surprised when they are wrong.

Teach the necessity of habitually calm, full, or all-round, cautious, frank observation, and of suspending the Judgment until the proper time for deciding comes.

Precept and example may both be used, and precept tacked on to example will generally be most effective.

Boys often make wrong answers through hurry. In such cases, teachers may set matters right, by returning the question with the cautionary word, "*Think.*" A mild secondary reproof of this kind, coming as the sequel to a fault in Judgment which might have been avoided, often meets the case. Frequently, however, it is desirable to examine the matter, and find out what led to the faulty or mistaken Judgment. An occasional homily on the need for *care as well as promptitude* in Judging, is wanted too. Opportunity for all this is common enough every day.

Again, instances of disastrous action, life-long trouble, and irretrievab

mistake, consequent on faulty Judgment, which arose itself from insufficient examination, can be made to serve. Biography, and History, and occasional passing events, may provide texts.

With all this, *decisive promptitude should be encouraged.* Carefulness and a habit of full observation, may easily pass over into vacillation.

The whole question is one of the widest and most important which educators have to deal with.

A degree of *independent* Judgment is to be encouraged. But children should be taught, with great emphasis, that obtrusive conceited precocity is very unseemly, and that their elders are far more likely to form sound Judgments than they, because of their larger experience.

Whilst teachers, therefore, *invite* their scholars to examine and judge, and to say what they think, they have to *repress* pert forwardness, and to *train* them in judging correctly, and in being modest when they express their views.

Train children to express the products of their Judgment in words, carefully, exactly, readily.

A Judgment expressed in words is a sentence. It would be well, if children were encouraged to construct sentences, and were trained in constructing freely, for the ability to express one's Judgments clearly, forcibly, easily, and fully, is an enviable power.

School Subjects and Judgment.

Object lessons are pre-eminent for giving varied scope for Comparison and Judgment. Size, shape, colour, weight, texture, and other qualities of objects can be observed, and Judgment may follow. Adaptability of means to ends, and structure to functions in machinery and contrivances, in plants and in animals, is another direction in which Judgment may be turned. Indeed, the forms of exercise connected with these lessons is almost unlimited. *Reading* is made more intellectual, and more gratifying, when Judgment is brought to bear on the subject matter, and (Comparison) on the reader's style. *Writing* exercises the faculty too, if it be respectably taught. Learners must be led to compare the height, thickness, straightness, evenness, and parallelism of strokes, the size and shape of turns, and the general character of their work, and then to adjudicate upon it; unless this is done, their work will be of small value. *Arithmetic* takes learners into a different field, and trains them to compare and decide on methods; of itself, this subject yields a wide training for Judgment. *Grammar* demands a still different and more abstract form

of comparison with the consequent decision; the beginner may have to turn the question about in his mind a good deal, before he can judge whether a certain word is an adverb or a conjunction, and similar difficulties occur to the more advanced student. A great part of the value of Grammar as a mental training, consists in such enforced exercise of the Judgment. We forbear to speak of other school subjects in this bald sketch; *every sound educator finds means of utilizing them all, he sets Judgment to proper work in many ways, and thus trains it.*

Analytic and Synthetic Methods in Teaching.

The objects we first see, and the Notions we form, are complex. Early Mind work consists largely in separating and classifying the parts of these objects and Notions. Hence the **Analytic Method** *is first in the order of actual experience*, and is usually the Method of Discovery. It begins with things most known, observes, separates, arranges, classifies, compares, contrasts, traces back consequents to antecedents. and effects to causes. "*It thus proceeds by a path opposite to the course of Nature*, until it arrives at simple or undecomposable substances (*material* analysis); or at the most abstract Ideas (*logical* analysis); or at universal principles or laws (*scientific* abstraction and analysis in general). "This is, in fact, the process" which commonly goes "under the name of Induction."*

A little reflection will lead teachers to understand why it is so difficult to hold children's Attention to the process of Logical Analysis. The difficulty increases at each step; the mental demand becomes greater and greater, as the Abstraction mounts higher and higher. Physical Analysis makes no such demand on pure Thinking; it is objective, and as it commonly appeals to some forms of Curiosity, it is usually a popular and effective mode of teaching.

The **Synthetic Method** is the reverse of the Analytic. "It commences with what is most simple, and following the process of nature, consists in combination. It lays down simple truths, or general axiomatic principles, and proceeds from them to derivative and complex truths."*

The original discoverer in *science*, and he "who desires to improve it by fresh discoveries, *must adopt the Analytic Method.*" So far as teaching is concerned, this method, if well used, "*makes the student a partaker in all the interest of the discovery.** But *the Synthetic Method is more generally adopted;* fundamental truths can be expressed simply, and remembered with less strain, especially when they are *illustrated.* Such truths afford a foundation on which others may be laid, and if the frag-

* See Notes to Aldrich, *Logic.*

ments be fitly pieced together, a symmetrical whole is produced. The principle of Synthesis, as exemplified in most text-books on Science, is applicable in teaching all school subjects, and is the easiest method to adopt.

Either method may be used; it is not necessary to confine one's self to either, a judicious admixture of both makes the best teaching.

N.B. Bain thinks the terms Analysis and Synthesis are not wanted in the nomenclature of teaching. "Everything that the words cover is conveyed by other names, more expressive and more intelligible, such as Description, Explanation, Abstraction, Induction, Deduction."* Perhaps so, yet it is not difficult to understand what the terms mean, and the work of young teachers is sure to be improved, if they get a clear view of it from these two sides.

Reasoning deals with *Inference.*

Much of our knowledge is obtained *directly*, through the senses and through self-consciousness. All our elementary knowledge, or our knowledge of separate things is so derived though some truths may possibly be intuitive.

Reasoning gives us knowledge *indirectly.* For example, the north wind in Victoria is warm, whence we might infer that the interior of Australia is hot. So from seeing snow on mountain-tops, we might infer that it is cold on those heights; or from finding a river rising, that there has been rain above.

There are *two forms of Inference*, *Inductive* and *Deductive,* to which there are corresponding modes of Teaching.

Inductive and Deductive Methods in Teaching.

These methods are *practically the same as the Analytic and Synthetic Methods.* Analysis is a necessary preliminary to Induction, and Mind could stay at *Analysis.* But this would be stopping almost unnaturally, and teachers feel impelled to go on to *Induction.*

(1) **Inductive Method** begins with examples, and leads on to generalizations and rules.

If, after arranging several worked examples in arithmetic of a similar character, we analyse the working, and having found out wherein the different examples agree, we express this agreement in words, and thus

* *Education as a Science*, p. 131.

make a General Rule for dealing with all such cases—we proceed inductively.

Or if, in an early lesson on the Adjective, the teacher contrives examples to show the powers or uses of adjectives, and, after leading his scholars to form a general Idea (even a hazy one) respecting the function of the adjective, he expresses the Idea in words, or *constructs a Definition*—he teaches inductively.

Many instances are given in the section on Method.

Caution. There is a loose use of the term, which should be guarded against. "*Induction*" is improperly used, as though it were the same as "*Educing*" or "*Eliciting*." To *educe* or *elicit* is to *draw out*, and is properly opposed to *telling;* we may, or may not use the Inductive Method in Educing.

(2) **Deductive Method** begins with General Rules, Definitions, and inclusive statements, and applies them to separate cases and examples.

If, having formulated a Rule in arithmetic, we work sums by it, or *apply the General Rule* to individual cases, we proceed on the Deductive Method.

So we proceed Deductively, when having defined the Adjective, we *test* the *separate words* in a sentence *by the Definition*, and thus determine whether they are Adjectives or not.

The *objects of Method* are (1) the **Discovery**, and (2) the **Communication** of truth. The two species of Method just mentioned correspond to, and are largely adapted to these objects.

Hence there is a propriety in speaking of them as the *Method of Discovery*, and the *Method of Instruction.*

In dealing with a subject—

Correct method *avoids* both *redundancy and deficiency*, needless repetitions, and enlarged discussions on obvious points.

Digressions are to be avoided. Even if interesting, they break the continuity, and tend to distract Attention. To a degree, and in a sense, the same may be said about *Illustrations;* but the more than countervailing advantage of added clearness, not only justifies, but demands the employment of Illustration.

Divisions should be collateral, or be Cognate or Co-ordinate Species of the same Genus.

Each part should bear a closer relation to that immediately preceding

it than to any other. Note, however, that abrupt transitions often favour clearness, by force of Contrast. *Too many and too few subdivisions* are alike to be avoided.

Whatever is essential to the knowledge of any topic must precede that topic. Every other rule must yield to this. To attempt to teach, without any ground to rest upon, must be useless.*

Spontaneous Induction goes on without our notice, and without conscious effort from us.

The greater part of our common and most useful generalized knowledge is thus obtained; *e.g.*, Water quenches thirst, birds fly, fire burns, &c.

Making Inductions, and drawing Conclusions from them, constitute the highest work of man as a rational being.

Preparing our scholars for later life-work at these two forms of Reasoning, by reasonably exercising both forms of the faculty on such school lessons as allow it, is one of the highest duties devolving upon us.

Muddle and confusion in Reasoning (fallacies of Confusion, &c.) are met by going back, examining Propositions, and perhaps Terms, and then repeating the Reasoning, after *clearing the ground.*

Warn scholars against making hasty Inductions.

Bring precept and example to bear. Utilize actual faults as recommended under Judgment. If we could but succeed here, how much after-trouble we should obviate!

Exercise the Reasoning Powers throughout the school, according to children's ability.

Exercising the Reasoning Faculty variously and sufficiently, without overstraining it, is the supreme form of dealing with Intellect in school. "*Why?*" "*Give your reasons,*" should be almost constant demands.

We have once more to remember, however, that the power to reason is properly a late form of Mind development. It would be a mistake to set children to "reason" about number, for example, before they have had fair practical experience with number; even then, only very simple forms of reasoning should be attempted. Later on, Reason may and should be put to some strain, but if this be done out of its time, or out of proportion, the result is sure to be meagre at best, power is misapplied and wasted on both sides, and distaste and disgust ensue also.

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* See Aldrich, *Logic*, Notes.

All school subjects may be pressed into the service more or less: each has its value. Locke gives pre-eminence to Mathematics, and all will agree that for "exercising the Mind in observing the connection of Ideas, and following them in train, nothing does better than Mathematics." But *probability* as well as *certainty* has to be dealt with in life, and other subjects, such as History and Physical Science, are wanted in education, as well as Mathematics.* "*Finding Reasons*," "*Looking for Causes*," "*Acting Analogies*," may enter into all lessons.

Teachers should be on their guard against doing this Reasoning work for their pupils.

The work is relatively so hard, and in its higher and more abstract forms, so very uninviting that children attempt it with reluctance, and, indeed, do not exert themselves, except after training and under pressure. Teachers are then often tempted to do the scholars' work as well as their own, partly to save time, and partly in impatience to reach a conclusion,

Progress or acquirement in Reasoning Power follows the general law; it depends on *judicious exercise*, on doing, or trying to do, for one's self.

Regulative Faculty.

The Regulative or Legislative Faculty is "the power which the Mind has of being the native source of certain necessary or à priori cognitions; which cognitions, as they are the conditions, the forms, under which our knowledge in general is possible, constitute so many fundamental laws of intellectual nature."

The Regulative Faculty is "the power which the Mind possesses of modifying the knowledge it receives, in conformity with its own proper nature."†

Knowledge is (1) *Intuitive, or à priori;* (2) *Derived, or à posteriori.*

The Five Cognitive Faculties we have considered, deal with knowledge obtained through experience,—experimental, *à posteriori* knowledge; the

* See Fowler's *Notes* to Locke.

† Hamilton, *Met.* II., p. 347, also Lect. xxxviii.

Cognitions we gain through these Faculties are *derived*, as results of Perception, Memory, Reflection, Abstraction, &c.

But there are other Cognitions, *apprehended directly*, such as, "Two and two are four," "Black is not white," "A thing cannot both be and not be," "The whole is greater than its part," which are *primitive*, and not derived; we cannot but think them. They may lie hid, until drawn from their obscurity by the Mind's acting on the materials of experience; but there they are, parts of the Mind's fundamental possessions, anterior to, though revealed by experience.*

"All reasoning comes at last to principles which cannot be proved, but are the basis of all proof."† These à priori Cognitions are the laws or conditions of Thought in general; they are the expressions of "*Common Sense;*" what goes counter to them is absurd.

They are therefore the laws under which knowledge à posteriori is obtainable or possible; in fact, they *regulate* mental operations. These necessary laws, or à priori principles, are classed under a common mental power or principle; taken together, they constitute the "*Regulative Faculty.*" This power is also spoken of as *Reason* (as distinct from Reasoning), νοῦς, and *Common Sense.*‡

Note, that the term "Faculty" is employed here in a peculiar signification.

Whether the Mind knows anything anterior to and independent of experience or not—*i.e.*, whether Intuitive or à priori knowledge is possible—has been, and is, a leading controversy amongst thinkers.

Great names could be cited on either side. (Appendix B, Bain's *Mental and Moral Science*, gives an outline of opinions that have been held.) We have followed Hamilton, whom Mill and Bain would generally oppose.

Whichever view be correct, our practice as teachers will be the same.

If primitive Common-sense truths exist in the Mind, but lie hid until experience reveals them, our duty as Educators would be to *provide* such *experience* as will lead to their revelation. If, on the other hand, such

* Hamilton, *Met.*, II., p. 347, also Lect. xxxviii.

† Bain, *Mental and Moral Science.* App. B., p. 67.

‡ See Veitch's Hamilton, ch. v.

truths are generalizations derived from experience, our duty is equally to *provide* the *experience*, and lead up to the generalization.

But, in fact, these principles are seized so early, that *our work lies* rather *in using them as the criteria and bases of all forms of thinking*, than in establishing or developing the principles themselves.

THE WILL: MORAL AND RELIGIOUS EDUCATION.

THE WILL.

The Will is that power or function of Mind, which enables it to control mental and bodily action; or, it is the power of determining whether we shall or shall not do anything which we feel able to do.

Will is "a power to direct the operative faculties to motion or rest."* **Volition, or Willing,** is the exercise of this power.

> "We find in ourselves a *power* to begin or forbear, continue or end several actions of our Minds, and motions of our bodies, by a thought or preference of the Mind ordering, or, as it were, commanding the doing or not doing such or such a particular action. This *power which the Mind has*, thus to order the consideration of any Idea or the forbearing to consider it, or to prefer the motion of any part of the body to its rest, and vice versa in any particular instance, is that which we call the **Will.** The actual exercise of that power, by directing any particular action or its forbearance, is what we call **Volition** or **Willing.** The [execution or] forbearance of that action, consequent on such order or command of the Mind, is called *Voluntary*. And whatsoever action is performed without such a thought of the Mind is called *Involuntary*."*

> Will is often regarded as unanalyzable. Bain, and some others, hold, on the other hand, that "Volition is action under Feeling,"† that Will has two factors, Feeling and Action—that it consists of an action in idea, together with a Desire (Feeling) that the Action should occur. Volition involves Desire prompting to Action, the Action being such as we consider likely to bring about the realization of the Desire.

Will manifests itself through *action*.

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* Locke, *Essay on the Human Understanding*, B. II., ch. 21.

† See Bain, *Mental and Moral Science*, p. 215, &c.

"Feeling-prompted activity"—action under the influence of motive—are other names for *voluntary* action. Attending, reflecting, walking, eating, writing, &c., are actions prompted by motives—we have an end in view in such action.

Motives are incentives to the Will, *i.e., the Will acts in response to Motives.*

Pleasures or Pains, actual or ideal (anticipated) are Motives; all Motives fall under one or other of these heads. One or both forms are necessary to spur the Will to action. "*No Volition takes place without a Motive.*" (*Locke.*)

Pleasure moves us to act that the pleasure may be continued or increased; *Pain*, that the feeling may be mitigated or removed. The tendency to seek pleasure and avoid pain is instinctive and universal.

Note, that all forms of gratification, actual or ideal, coarse or refined, are regarded as Pleasure, and all forms of uneasiness as Pain. Every sensation, and every emotion, past, present, or prospective, acts in its degree as a Motive to the Will.

"Volition follows the strongest motive." "The strongest motive is the greatest apparent good," or else "the greatest removable uneasiness." (*Locke.*)

Leibnitz compares the Will to a balance, and Motives to weights in the scales.

Many thinkers regard this as insufficient and incorrect. We are conscious of a power to *choose* between alternative actions; whence it is assumed that there is a personal entity, an "ego" apart from the Will, which is the ultimate arbiter. What Locke calls "the strongest Motive" is not, therefore, necessarily the ruling force; the "ego" can decide to follow the motive or no. The momentous Free-will and Necessitarian controversy turns on this matter.

Conflicting Motives. Several Motives may co-exist, some moving to action in one direction, others in another. The *effective Motive* in such a case, is the total preponderance of one set over the other.

Conflict generally takes place between the *actual* and the *ideal*, or else between the *near* and the *remote. The actual is relatively stronger than the ideal, and the near than the remote;* an *inferior present feeling* will often out-weigh the idea of one that is *stronger but farther distant;* many boys will spend their pocket money on sweetmeats for present gratification,

although they would derive greater pleasure from subscribing it to a football club two months hence.

Ideal, anticipatory motives are *grounded on experience;* former action has brought about certain results, similar action will do so in future. They owe their force to *retentiveness for pleasure and pain*, and this is partly a matter of natural endowment, partly of education. *Foresight and Prudential conduct spring from remembered experience.*

Ideal Motives are what we must rely upon. One way of stating *the problem of training the Will*, and of *Moral Education* is to say, that it consists in supplying such a stock of strong and desirable ideal Motives, as will secure right conduct.

Ideal motives owe their force to the persistence, reproduction, and re-presentation of old impressions. The *character of the original impress*, therefore, takes the first place. This depends largely on *the strength and general character of the impressing force*, but more upon the *quality or natural endowment of the Mind* itself, especially as to its retentiveness for pleasure and pain, and the degree in which its intellectual and emotional sides are relatively strong. *Repetition* counts for much. *Association* adds its share; actions, places, objects, associated with strong Feeling, recall the feelings to Memory, and become influential in Will.

Desire and Aversion. Pleasures which have been experienced, often arise in Idea, and prompt us to action that they may be experienced again. The mental state induced by re-presented pleasure, without its realization, is *Desire.* Re-presented (and actual) Pains produce *Aversion* in an analogous way.

Both prompt to action; both are motives to the Will. Their motive force depends on the amount and degree of the actual or ideal Pleasure and Pain experienced in connection with them.

Note that Volition includes (1) Desire (or aversion). (2) the prompting to action, (3) ideal action, calculated to bring about the actual realization of what is desired; Feeling (Desire) precedes Volition, action follows it.

Development of Voluntary Power. Will controls bodily action, Feeling, and Thought, more or less. All these forms of Control are acquired.

(1) **Control of Limbs.** Movements (perhaps accidental at the outset, perhaps spontaneous, perhaps prompted by sensations) happen to coincide with pleasurable or painful feeling; these movements being repeated, bring about a repetition of their concomitant pleasures or pains; *an association is thus set up between feeling and movement*, and the Will is

prompted to continue or stop the action. Fortuitous at first, action which is found to produce pleasure or pain becomes more and more controllable as power increases by practice; "an adhesive growth takes place, by which the feeling can afterwards command the movement."* Then *Sensations indifferent* in themselves, but *associated with* others which are *pleasurable or painful, will induce action* to secure the Pleasure or avoid the Pain. *Exercise meantime increases power* continually; muscles are trained and enabled to act singly and in groups. *Other agencies and associations* also come into play; thus movements are associated with the *word of command; Imitativeness* leads us to execute the same movements as we see in others; movements are associated with the mere *wish to move;* and, lastly, having connected movements with the *idea of the effect to be produced*, we act accordingly.* An important part of school training is accustoming the child to *act* and regulate his movements at the word of command, with exactness and promptitude, and to *restrain action* if it be unauthorized.

(2) **Control of Feelings.** This is only possible to a limited degree, and only so far as the *manifestation of Feeling* can be controlled; the Will can influence Feeling only so far as it can control the muscles. In mild cases, resolute suppression of action is notably sufficient to suppress emotion; a slight tendency to hilarity, for example, is readily checked by enforced seriousness of bearing. Where Feeling is very strong, however, enforced suppression seems to intensify it. Yet here, as in all cases, power comes by practice; some obtain such command over themselves, as seldom to betray what they feel; and better, they are able to control their Feelings so far as to suppress one that is ignoble, or to subordinate it to a higher.

(3) **Control of Thoughts.** This, too, is a growth, a gradual acquirement. The Will acts upon Thought by controlling Attention, and thus resolutely shutting out distinctions, shutting up the mental force to whatever is in hand, determining what thoughts shall arise, the direction they shall take, and how far they shall go. Command of Thought helps to command Feeling; *e.g.*, a story may excite sympathy, anger, or pity; changing the current of one's thoughts may check levity, or may counteract ill-will. Reciprocally, Feeling influences Thought; Pain may almost prevent pure thinking. Esteem or Ill-will may bias our thought, &c.

Deliberation and Resolution. Deliberation is a voluntary suspense or abstention from action, in order that we may think over, consider, and weigh *pros* and *cons*. It is induced by

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* Bain, *Mental and Moral Science*, pp. 325, 338.

the remembered experience of evils resulting from hasty action before.*

Bain holds that Deliberation (and Choice) is *not* the characteristic or essential feature of the Will, as is often taken for granted. On the contrary, the general attribute of Will is to act at once on a motive. Deliberation is brought about by education, training, and experience; the undisciplined Will yields to immediate impulse.

Few habits are of such practical value as the practice of deliberating calmly, and of taking all important circumstances into account before acting.

Resolution, Determination, is the state intervening between Deliberation and Action.

With this are connected *Steady Purpose*, *Perseverance*, *Wilfulness*, and *Obstinacy*. The tenacity with which a Resolution is adhered to, *strength* of purpose, is an important element in Will. Observe, however, that it may take a good or a bad direction.

Training the Will resolves itself into exercising the faculty aright, *i.e.*, according to its strength and needs, and under the influence of proper Motives, that desirable traits may be developed, and undesirable characteristics repressed.

Authority, Instruction, and the Discipline of Consequences, acting collectively and throughout a long period, are the training agents, in raising Will-weakness, vacillation, and irresolution to strength, in putting calm deliberation in place of hasty impulsiveness, and in substituting steady purpose and well-regulated firmness for headstrong wilfulness and obstinacy.

For further treatment, see next chapter.

The Emotions are Feelings, not primitive (like the Sensations of Taste or Sight) but derived. Varied forms of Intellectual action enter into their growth. They are the chief Motives to which we can appeal.

It is impossible to classify the Emotions logically. Bain attempts to enumerate them, by proceeding from Simple to Complex, thus :—

(1) *Connected with Relativity*, *i.e.*, with *Transition* from one mental state to another, or with strong *Contrast* or *Opposition* of two mental conditions; *Novelty*, *Surprise*, *Wonder*, *Variety*, *Liberty and Restraint*, *Power and Impotence*.

(2) *Terror*. *Fear*.

* See Bain, *Mental and Moral Science*, p. 363.

(3) *Tenderness, Love,—Admiration, Reverence, Esteem,—Benevolence, Generosity,* [*Sympathy*], *Pity.*

(4) *Emotions of Self,—Self-complacency, Self-esteem, Self-Conceit, Self-respect,—Pride, Emulation, Envy,—Humility, Modesty, Self-abasement,—Self-reproach, Remorse, Shame,—Love of approbation.*

(5) *Power,—Authority, Ascendency, Influence,—Contempt,—Ambition.*

(6) *Anger,—Revenge,—Hatred, Antipathy,—Cruelty,—Indignation.*

(7) *Pursuit,* as in *games* and *contests, plot-interest* in novels and literature, searching for knowledge in *study.*

(8) *Intellectual Emotion,* as the pleasure felt in discovering *Identities* and *Similarities* in different things.

(9) *Sympathy—Imitation.*

(10) *Æsthetic Emotion,—Symmetry, Proportion,—Rhythm,—Harmony* (in sound, colour, and form), *Fitness—Design* (unity in diversity)—Sublime.

(11) *Moral Sense.**

Classification of Motives "is the classification of Pleasurable and Painful Feelings,"* including—

(1) Pleasures and Pains of *Muscular* Exercise and Repose. (Riding, Swinging, Lifting, &c.)

(2) Those connected with *Organic* Life. (Fatigue, Relish, &c.)

(3) Connected with the five *Senses.* (Light, Fragrance, Mal-odour, &c.)

(4) Connected with Special *Emotions.* (See last paragraph.)

(5) *Appetites.* (Sleep, Hunger, &c.)

(6) *Instincts.*—"Untaught abilities." (Sucking by child, Reflex actions connected with Digestion, Respiration, etc.)

With this may be compared, **Motives, Active Powers, Springs of Action,** as arranged by Whewell.†

(1) *Appetites* (or Bodily Desires), *e.g.*, Hunger, Thirst, desire for whatever gives Sense-gratification.

(2) *Affections* (towards persons), *e.g.*, Love, Anger.

(3) *Mental Desires* (Abstractions), *e.g.*, for Safety, Possession, Society, Superiority, Knowledge.

(4) *Moral Sentiments* (connected with judgment of Right and Wrong), *e.g.*, Approbation and Disapprobation, Indignation and Esteem.

(5) *Reflex Sentiments* (connected with Self), *e.g.*, desire for Love, Esteem, or Admiration, and for our own approval.

* See Bain, *Mental and Moral Science,* Book III.

† See Bain, *Mental and Moral Science,* pp. 695, 696.

Moral Education.

Aim or Object. Moral Education aims at *teaching Duty* and *getting Duty done*. Or, as some would say, it tries to secure *right Conduct*, *proper Habits*, and *good Character*. Or, it endeavours to implant right Principles, to furnish a good stock of desirable Motives, and to minimize the influence of those which are bad or undesirable.

The development of a being governed by reason and a sense of duty, instead of inclination and impulse,—one habituated to follow the dictates of Conscience, and to do Right because it *is* Right, is universally admitted to be the highest as well as the most difficult part of Education. Without good moral character, increase of knowledge is but increase of dangerous material, and of power to work mischief.

"*Every one must some time or other be left to himself.*" (*Locke.*) Our duty as teachers is to educate our pupils up to that degree of Moral Knowledge, and that stage of self-government which fairly correspond to their age and responsibilities.

Morality. "The doctrine which treats of actions as Right or Wrong is Morality." (*Whewell.*)

The word "Moral" is often used loosely, and because no better term offers. We use Morality in a narrower sense than Whewell, as concerned with men's Duties towards one another, or with a man's Duty as a member of society.

Ethics is the science or philosophy of Morals. It includes (1) settling what is **Right** and what is **Wrong**,* *i.e.*, determining

* There are *two broad theories of Morality*: I. An action is Right, because it is our **Duty**, or because it is enjoined by recognised Authority; II. An action is Right when its **Consequences** are good. On the second theory, the criterion of consequences is the arbiter; an action which does not make for happiness cannot be Right; this is the *Utilitarian* theory. On the first, the agent who is obedient to Authority is not required to calculate the consequences of his action.

Observe, that on either theory the agent may *intend* to do Right, and yet fail from imperfect knowledge, and perhaps actually do Wrong. In practice, *Motive has to be considered* as well as Result. Good Motive and perfect Knowledge are (necessary theoretical) factors in Morality.

what men *ought* to do, and to abstain from doing; (2) providing sufficient **sanctions** to secure right conduct, and abstention from wrong.

Laws, or directions for conduct, are issued and enforced by *Authority*. Authority implies *power to enforce obedience to Law by inflicting Punishment.* Duty, Law, Obligations, Government, Authority, Punishment are related terms.* Locke speaks of three "Laws that men generally refer their actions to,"—"The *Divine* Law, the *Civil* Law, and the Law of *Opinion* or *Reputation*."†

"A **Sanction** is the pain or pleasure which is attached to a Law" (*Bentham*), and which enforces, or tends to enforce, compliance with it. Sanctions for ordinary Morality are *Natural or Physical, e.g.*, pleasant feeling and healthy appetite after exercise; *Legal, e.g.*, punishment of theft by imprisonment according to law; *Popular, e.g.*, esteem of one's fellows consequent on some meritorious act. In well-ordered communities the popular sanction reinforces the legal sanction; Public Opinion upholds the Law. *School-tone* represents the popular sanction in school; it is a capricious and shortsighted, but powerful immediate sanction, and has to be watched, guided, and largely formed by the head-teacher.

Duty and Virtue are often used for *obligatory* and *optional* morality respectively.

Duty is what one *ought* to do, or is *required* or *obliged* to do. *Duty* and *Right* are correlative terms; one person has a *right* to expect or exact what it is the *duty* of another to render. "To a right on one side corresponds a duty on the other."‡ Thus there are *religious* duties towards God, *moral* towards men, *personal* towards ourselves, and *humane* towards lower animals. Duty may be enforced by *Punishment* for non-performance.

Virtue, Merit, Nobleness, is a form of excellence in excess of Duty, and which cannot be demanded. When recognized, it is *rewarded*, perhaps by Conscience alone, perhaps by some form of secondary or primary reward.

Society *obliges* a man to care for his children, and to abstain from injuring his neighbour; it punishes him if he fail in his duty, or commit a crime. But it does *not* oblige him to risk his own life in rescuing his neighbour from a burning house, or in saving him from drowning; such actions are meritorious or noble.

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* See Bain, *Mental and Moral Science*, p. 434, et seq.

† See *Essay on Human Understanding*, Book II., ch. xxviii., sec. 7, et seq.

‡ Whewell, *Elements of Morality*, Book I.

Coming down to school-life, a boy does his duty when he performs what is required with a certain degree of painstaking, beyond which our demand cannot be pushed. Whatever transcends this may be encouraged, but it cannot be demanded.*

Conscience, Moral Faculty, "Moral Sense," pronounces on the quality of our own (and others') thoughts, intentions, and actions; it lets us know whether they are *Right* or *Wrong*, and whether we *ought* or *ought not* to carry them out.

This is the *Judicial* or *knowledge-giving function* of Conscience, the *Intellectual* side of the faculty.

We experience feelings of *satisfaction* and pleasure when we act as Conscience dictates, but of *self-reproach* when we act counter to its monitions.

This is the *Disciplinary, punitive, and reward-bestowing function* of Conscience, the *Emotional* and immediately motive side of the faculty, the element of *Feeling* in it.

"Conscience is described by such terms as *moral approbation* and *disapprobation;* and involves, when highly developed, a peculiar and unmistakable revulsion of Mind at what is Wrong, and a strong resentment towards the wrong-doer, which becomes *Remorse*, in the case of self."†

The chief controversy in Moral Philosophy is on the question whether Conscience is a simple, primitive, independent faculty, or whether it is derived, and dependent on Education and circumstances. Are our sentiments of Right and Wrong *immediate and natural*, or are they *evoked by experience* of the consequences of good and bad conduct?

One view connects Conscience closely with Theology and Religion, the other with Intellect alone.

(1) "There is an unquestioned universal Morality.—And in every case, where the Moral Sense is unfettered,—Conscience is found to speak the same language; nor to the remotest ends of the world is there a country or an island where the same uniform and consistent voice is not heard from her."‡ Conscience is here represented as a unique natural gift, essentially

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* See Bain, *Mental and Moral Science*, pp. 434-436.

† Bain, *Mental and Moral Science*, p. 456.

‡ Chalmers, *Moral and Intellectual Constitution of Man*, I., p. 89.

the same in all men, though it may be blunted and vitiated by surroundings.

(2) "I entirely dissent from Douglas Stewart, and the great majority of the writers on the Theory of Morals, who represent Conscience as a primitive and independent faculty of the Mind, which would be developed in us although we never had any experience of external authority. On the contrary, I maintain that Conscience is an imitation within ourselves of the government without us."* "What is meant by the derivative theory of Conscience is, that everything that it includes is traceable to some one or other of the leading facts of our nature; first of all to Will or Volition, motived by pain or pleasure next, to the Social and Sympathetic impulses, —Education as a third factor, plays a part. I should not be far out in saying that 75 per cent. of the average Moral Faculty is the rough and ready response of the Will to the constituted penalties and rewards of society.† Elsewhere, Bain traces the growth of the Moral Faculty from its factors, *Prudence* (enlightened Self-interest, fear of Punishment, and desire for Pleasure), *Sympathy* (fellow-feeling for others), other *Emotional influences* (Anger, Tenderness, Æsthetic feeling, &c.), and *Influences of Authority*.‡

Notice the following points; they hold on either view of Conscience.

There are natural differences in Moral endowment, as in other realms of faculty; these differences render some more amenable to Moral influences than others. *Heredity* may account for this in part.

Education helps to develop and Mould the Moral Sense; the susceptibility of Conscience, and more especially the direction it takes, depend greatly on its culture. People may indeed be trained, so far as one can judge, to take diametrically opposite views about Right and Wrong, even on such matters as murder (Thugs of India, for example). It would, therefore, be unfair to London street-Arabs, and many children of thieves and reprobates, to judge of their language and conduct by the standard taken for those brought under educational influences of the opposite and nobler kind.

Experience of the good and evil results of actions is the chief factor in forming the Moral Sentiment; the Rightness and Wrongness of conduct is not brought home to us, until we feel the consequences.

Morality and Religion. Morality is properly concerned

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* Bain, *Emotion and Will*, p. 285.

† Bain, *Education as a Science*, p. 58.

‡ See *Mental and Moral Science*, pp. 453-459.

with a man's relations to other men, or with his conduct as a member of society.

Morality recognizes the Needs and Rights of individuals, but deals with the individual as one among others. Each man is helped by others; it is each man's Duty to help others in return; this is the foundation of Law.

Moral Duty then takes two forms; (1) *abstention from wrong-doing*, (2) *rendering service.*

(1) In civilized communities every man's free action is limited; *he must abstain from injuring his fellows*, *i.e.*, from crimes and wrongs. He may not even do as he likes with his own, if in so doing he injures or damages his neighbour's person or property; the law to regulate "burning off" scrub in Victoria may be instanced as an example.

(2) Certain *duties have to be performed*, certain *services* rendered to the State and to individuals; *e.g.*, care of children and of parents, serving on juries, and the like.

Law does not take notice of all forms of bad conduct; some actions are immoral, yet they are not punished by Law. To a degree a man may be a bad husband or father, a drunkard, injuring himself, and a source of evil to the community, and yet keep within the strict Law.

Religion is concerned with a man's conduct and relations to his God. It imposes its own duties, and has sanctions of its own.

A Jew keeps his Sabbath and holy days, and observes special ordinances enjoined by his religious system. Many Christians fast on certain days, practise auricular confession, and engage in rites which other Christians think are unnecessary. These religious Duties, together with others (such as prayer), are distinct from ordinary honesty, fair-dealing, &c., belonging to Morality, and are rendered as *Duty to God*, who will reward those who discharge such duties faithfully, and punish those who do not. Believers have also the present Reward or Punishment of *Conscience*, approving Duty done, reprobating its non-performance. Only those who have experienced the force of Religious motives can really *know* anything about their power to transform the character, or can appreciate the peculiar sanctions of Religion.

Some hold that *Morality should be founded on Religion*, and Morality which has not Religion for its basis is unreliable, and, indeed, is not to be esteemed as true Morality at all.

In this view Religious Education is essential to Morality, Religious

motives must be the fundamental reliance in teaching and enforcing Moral conduct, Morality is indeed part of Religion.

Moral Education, when based on Religion, derives a superior force from the belief that the Moral System is of Divine origin, that it is promulgated by the Supreme Being, who does and will punish those who refuse or neglect to conform to it. Morality is thus supported and aided by a powerful sanction.

Some of the bald elements in ordinary religious belief are (1) *There is a God*, who made us, who sees and knows us altogether, and to whom we owe obedience. (2) *He has settled what our Duty is* by making known His Will. (3) *We ought to conform to His revealed Will* by doing Right and avoiding Wrong. (4) *He will reward or punish us according to our conduct*, and the motives which influence us.

Where this is acknowledged, a teacher can press the duties of truthfulness, kindness, honesty, obedience to parents, and general right-conduct, as well as abstention from falsehood, cruelty, theft, and wrong-doing, by reference to the Will and command of God.

Stewart writes, "Although Religion can with no propriety be considered as the sole foundation of Morality, yet when we are convinced that God is infinitely good, and that He is the friend and protector of Virtue, this belief affords the most powerful inducements to the practice of every branch of our Duty."

Observe, too, that the Christian Religion includes all ordinary Morality and more. The highest generalization of Morality can be expressed in a comprehensive injunction of regard for our fellows.* In Christian Morality this appears as "*Thou shalt love thy neighbour as thyself*," and is distinct from the supreme Religious obligation, "*Thou shalt love the Lord thy God with all thy heart, &c.*"

"If a teacher is not to introduce the religious authority of moral precepts [to children], he cannot in the long run enforce upon their consciences the sense of moral obligation. It is absurd to think of teaching morals except on the basis of authority. On what is moral teaching to rest if you cannot say 'There is a God, and you must love Him; He made all of us, and because we are His children, we are bound to love one another'? If you take away authority as the basis of moral teaching, I know the teaching will be utterly ineffective, and that the system will end in the demoralization of the children.' †

* See Bain, *Mental and Moral Science*, p. 451.

† Bishop Moorhouse, *Evidence before Royal Commission*, Melbourne.

Notice that the teacher who appeals to Religious motives in teaching Morality, is at liberty to use the ordinary "Moral" incentives also, and to apply them in Moral Education.

Others maintain that *Morality is not necessarily dependent on Religion, and that it is not only possible, but also better to keep them separate.* They hold that Morality in itself, whether *obligatory* or *optional*, provides sufficient incentives to Duty and abstention from Wrong. It is certain that Moral actions and Habits are often found in persons who disclaim Religious motives altogether.

Religious Duty, as such, would not be asked for, nor would Religious sentiments and sanctions then be available.

The basis of the teaching, and the ultimate Motives relied on, will be the results or consequences of different forms of conduct to the agent and to others. It is bad and wrong to tell lies, for lying is a species of crime towards another, which may lead to his or to others' disadvantage; it is also disadvantageous to the liar in the long run, for people are unwilling to believe him in future. Intellectual and emotional motives (outside of Religion), especially Sympathy, must be prominent, and abundant illustration of the good or ill-*effects* of the conduct under consideration should be adduced. It has been urged that capable teachers, skilful in illustrating and enforcing good conduct by examples, drawn in general from ordinary surroundings, exercises, and duties, can teach Morality well, both in theory and practice, without resort to Religion at all.

Obligatory Morality is provided for by Law, and legal Sanctions are sufficient to ensure its performance; there is no necessity to call in Religious Motives as well. *Optional Morality* can be provided for by adequate Intellectual instruction, and by proper culture of the Emotions, again without appeal to Religion.

Action, Habit, Character. *Action*, long-continued, becomes habitual, or *Habits* are formed by repeated acts of the same kind. "*Character* is only prolonged Habit." Good *conduct* leads to good *manners*, and then on to good *character*.

This connection cannot be urged too strongly on the teacher's notice. *Actions* often repeated, crystallize into *Habits*, and in forming Habits we are forming *Character*. In addition to the general rule of *repetition*, the necessity for *consistency and similarity in the repeated acts* should be noted. *Attention, individuality* (including general natural aptitude, and aptitude in any special direction), as well as *educative influences*, have also to be borne in mind.

The practical summary or conclusion for us is, *Secure, or try to secure, good conduct, i.e., Right-doing.* With this, remember that young natures are most plastic. *Habit is acquired most readily during childhood, and once formed, will be much harder to eradicate than it was to form.*

Bear in mind the depressing and damaging effect of failure, and do all you can to *enable the child to do Right.* Do not ask too much, avoid fault-finding, graduate demand and fit it to his capacity, set him right kindly when he is wrong, encourage him to strive, and, if possible, enable him to conquer. If he can experience the pleasure of conscious Moral victory, this will be the best incentive to further striving and practice, on which good Habit depends.

Moral and Religious Education includes *Teaching* and *Training.*

(1) **Instruction in Duty.** *Knowledge* is one factor; the learner must *know* what he should do, and what he should abstain from doing; laws, rules, facts, and dogmas have to be taught, and the Judgment brought into action.

The ordinary teaching devices, modified to suit the subject, are applicable here. Clear presentation of Duty, or definite and easily-seen demarcation between Right and Wrong comes first, and, indeed, includes everything on the knowledge-giving side. *Precept, Example,* and proper *Correction of Faults* are our means of teaching Duty.

(2) **Securing Right Conduct,** causing learners to *do* what they know to be Right, and to *abstain from doing* what they know to be Wrong. This *active* side of Education is brought about by cultivating desirable **Motives,** the *Emotions* being especially looked to, but *Authority* being used on occasion, and the *Discipline of Consequences* kept always operative.

People act not so much from what they know as from what they *feel.* Hence, the first point is to cultivate the Emotions, and try to *secure right feeling.* With children who know their Duty, and yet fail to do it, or else pass over the boundary line and do Wrong, *Authority* can be called in to enforce Rules by its penalties.

Moral susceptibility has to be evoked and trained, that it may be active, or immediately assertive, as well as correct. Satisfaction at Right-doing, and Shame at Wrong-doing are to be encouraged; ultimately we may hope to get Right done because it *is* Right, and Wrong avoided because it *is* Wrong. Education on this side, lies in establishing the connection between Right-doing and Pleasure, and Wrong-doing and Pain; there

may be an element of coarseness in connecting these at first, especially with children who have been ill-cared for, but refined methods can come as finer feeling is developed.

All through, *the teacher and his action* occupy a chief place. His general example, self-control, personal subjection to high motives, his watchful oversight, active and kindly sympathy, and his consistent character, operate as a constant incentive towards one course, and away from the other.

The whole matter is sometimes put thus:—

Moral and Religious Education includes,

1. Teaching the Reason to judge correctly between Right and Wrong. Teaching Duty.

2. (*a*) Regulating the Emotions. Reason and Emotion together have to be worked on in developing Conscience.

(*b*) Cultivating the Habit of acting rightly, *i.e.*, as Conscience directs. Doing Right.

The two main points have now to be taken in more detail.

(1) **Knowledge of Duty.** Inculcating Moral and Religious principles and rules, making Duty clear, *teaching what is Right and Wrong*, comes first.

(*a*) **Precept.** *Instruction* has to be given on system. Facts, and generalized rules for conduct, as well as forewarnings and advice respecting inevitable difficulties, have to be supplied.

As in dealing with all generalizations and abstract truths, so pre-eminently in inculcating Moral and Religious principles, frequent *examples*, or abundant familiar *illustrations* should be employed. Whenever you can (and it is worth while to take much pains here), *contrive to illustrate or manifest what you wish to teach in an active form*, as a fact or real circumstance in the life of a boy or a man. Remember, too, that an example is generally made more clear and telling by adducing another example of the opposite excellence or defect. (See the *Caution* later on.) *Abstractions*, such as Justice, Integrity, and the like, are incomprehensible to children. Bell's "black-book," and Stow's "uncovered school-room," should be noticed in this connection.

Parable, simile, and the use of common objects and sights in illustration, characterized *the method of the Great Teacher*. Note also, that having lodged a thought, or set the hearers thinking, or having touched the heart, He often forbore further dogmatic teaching.

Stories, biographies, history, fable almost always command interested

attention, and have ever been a vehicle for conveying deeper instruction in an attractive form. Think out your narrative; try to make it carry its own moral; tell it well, and do not spoil its effect by lecturing or preaching. *If a teacher would dismiss the children's attention, he can do so certainly by ostentatiously "drawing a moral" from a story.* Comment should be *pointed and pithy*, that it may go home and stay there. It is easy to pass the line, and make exhortation and advice distasteful; good conduct may be urged too strongly.

Advantage should be taken of occurrences which offer favourable opportunities for inculcating and enforcing Moral and Religious Precepts. Circumstances often make a child specially receptive for a time; utilize such opportunities.

Caution. In illustrations, *avoid citing evil examples;* keep them out of sight in reason, for they may suggest evil ideas.

(*b*) **Example**. The teacher is, or ought to be, the child's hero and model. What he says, what he does, and what he is, go far to form the child's character.

In Religion and Morality, as in purely Intellectual teaching, ideas are formed most readily from *actual illustrations*. Here, above all, the teacher should be an earnest active leader, and not a soulless dead finger-post.

"The grand secret (worth all the others together, and without which all the others are worth nothing and less) for inculcating and teaching virtues and graces is, that a man honestly, and with more and more of silent sincerity, have them himself, lodged there in the silent deeps of his being; they will not fail to shine through, and be not only visible, but undeniable in whatever he is led to say or to do, and every hour of the day he will, consciously and unconsciously, find good means of teaching them. The business, I am sorrowfully aware, is often undertaken without this indispensable pre-requisite; nay, in general there is a dim notion abroad that a man can teach such things by merely wishing to do it, and without having them himself; but the fatal result inevitably is, he teaches, can teach, nothing but hypocrisy and unblessed apery and mendacity. It is a kind of salvation to his poor pupils if they, in a dim way, see through him, and refuse to imbibe the slow poison of such teaching."*

". . . . And then came that great event in his, as in every Rugby boy's life of that day—the first sermon from the Doctor. . . . What was it that seized and held these three hundred boys, dragging them out of themselves, willing or unwilling, for twenty minutes on Sunday afternoons?

* From a letter of Carlyle's, quoted in *Birmingham Daily Post*.

. . . What was it that moved and held us,—reckless, childish boys, who feared the Doctor with all our hearts, and very little besides in heaven or earth? . . . We couldn't enter into half that we heard; . . . but we listened, as all boys in their better modes will listen, to *a man who we felt to be, with all his heart and soul and strength, striving against whatever was mean and unmanly, and unrighteous* in our little world. It was not the cold clear voice of one giving advice and warning from serene heights to those who were struggling and sinning below, but *the warm living voice of one who was fighting for us and by our sides*, and calling on us to help him and ourselves and one another. . . . He showed them—by every word he spoke in the pulpit, and by his whole daily life—how that battle was to be fought; and stood there before them *their fellow-soldier* and the captain of their band. The true sort of captain, too, for a boys' army, one who had no misgivings, and gave no uncertain word of command, and, let who would yield or make truce, would fight the fight out (so every boy felt) to the last gasp and the last drop of blood. . . . [This] won his way to the hearts of the great mass of those on whom he left his mark, and made them believe first in him, and then in his Master."*

The use of examples in enforcing Instruction has been mentioned before.

(*c*) **Correction of Faults.** It has been observed already that a fault or mistake in ordinary school-work, when well corrected, is one of the best means of teaching; *it exemplifies what is wrong*, and enables the teacher to *contrast it pointedly with what is right*, and thus bring out differences clearly.

In like manner, *misconduct and default afford opportunities for Moral teaching*. (See *Note*, on following page.) The delinquent, and his fellows perhaps, have their attention called pointedly to the wrong-doing or short-coming; this can be tested by the canons of Duty, and both be made clearer thereby.

Appropriate *Punishment* is also a means of *teaching* Duty, for it concentrates attention on the fault, and associates it with ill-consequences.

As a rule, it is far more difficult to deal with Moral faults than with ordinary school-mistakes, but if delinquencies and transgressions can be wisely met, nothing is so generally efficacious in teaching Duty.

What has been said in another connection about dealing with faults

* See *Tom Brown's School Days.*

holds in Morals also: (1) let the fault be clearly set forth by contrasting it with what is correct; (2) so far as the case allows, have it corrected.

Note. Looking at faults as a means of teaching Duty, it is hardly too much to say that they are useful. But *Moral Mistakes are serious and damaging*, often leaving permanent wounds or lasting scars on the Moral nature; they are to be avoided and prevented by all possible means.

(2) **Practice**, Training by *Doing*, securing *Action* according to Knowledge (*i.e.*, Intelligent Performance of Duty), or, it may be, according to proper Feeling or Emotion, is the other essential.

Doing is better than Knowing.* We cannot lecture a child into good Habits; these are formed only by a succession of *doings*.

(*a*) **Cultivating Motives.** Moral and Religious actions are prompted by their own motives, although Motives and Moral action may be derived from Religion.

Training partly consists in *developing and strengthening* those motives which are desirable, and in *restraining, repressing, and gradually weakening* those which are undesirable.

Judicious exercise, suitable in quality, and not too exacting, is the agent for development. The sentiment of Pity, for example, might be worked by a tale of suffering; or an actual case of suffering might be used to awaken and train the Emotion. Sympathetic Benevolence, a close ally of the former Emotion, would then offer itself for training; so with the whole group of nobler Emotions.

Terror might be dealt with, partly by appealing to Common Sense, or by showing its folly, groundlessness, or unreasonableness, but more effectively by gradually exposing the weakly one to such forms and degrees of the terrible as he is able to withstand, and thus inuring him to difficulty, or enabling him to overcome his trouble in detail. Outbursts of Anger should be prevented in part by removing occasions for them; yet as such occasions must come at times, the process of gradual inuring to self-control and self-repression has to be provided for as in the former case; the unwisdom, the real unmanliness, and the possible danger of giving way to the temptation may be urged with force on the intellectual side.

Satisfaction at Right-doing, and *Dissatisfaction* when one is conscious of ill-desert, are developed early, and are comprehensive and powerful Motives, which teachers ought to foster.

* Froebel.

When the teacher is respected, and is known to be under the sway of certain Motives, the respect his children bear him induces them to set a value on these particular Motives, and to make them desirous to possess them for themselves.

(*b*) **Exercise under Authority**, *enforcing Right Conduct.* Not only must Duty be prescribed and clearly laid down, and not only have Motives to Right Conduct and abstention from Wrong-doing to be cultivated, but *it is absolutely necessary that children shall feel* **obliged** *to do Right, and abstain from Wrong.*

Knowledge of Duty is no sufficient guarantee of its performance. Children commonly form pretty correct notions about the quality of an action, but it does not follow that they will act according to knowledge. The child's Moral power is immature, and his Moral knowledge often imperfect. Hence, the teacher must "*make*" the child do his Duty, and not always be anxious to let him know why. His Authority reinforces, or acts as a substitute for Motive as yet imperfect. Authority *must* be the main guiding and restraining principle in childhood; it will also be a leading factor in the growth of Conscience.

As the Moral Sentiment matures, outside Authority may be gradually removed, and the learner habituated by degrees to self-government. In school, however, we never reach a condition which will allow a teacher to part with his Authority.

(*c*) **Discipline of Consequences.** *Experience of* the *good* following from Right Conduct, *and* still more important, of the *evil* results of Wrong-doing, is the most powerful of all agents in Moral Training. Hope incites, and legitimate Fear becomes a deterrent Motive.

The trainer's object is to associate Pain with transgression, and Pleasure with Right Conduct. If the Pain and the Pleasure followed *invariably, and as the natural sequel* of the action, the desired Association would be brought about speedily. Part of our duty lies in making the connection as thorough as we can by making it as frequent as possible.

A difficulty comes in, because the consequences are often so remote from the action, that the connection is not seen by the child, or if perceived, yet present gratification outweighs remote pain. Hence teachers are driven to substitute artificial penalties for natural unpleasant consequences of broken law. Yet they can and should make their punishments *seem* like inevitable consequences of ill-deserving.

It is to the practical application of (*b*) and (*c*) just mentioned, that the school owes its power as a Moral force.

School Discipline, which tries to secure Obedience, Order, Attention, and steady honest application in school, as well as decorous kindly conduct outside, covers most of the ground in Practical Moral Education at school. *The chapter on Discipline might, for the most part, be appropriately placed under Moral Education.* In accustoming the child to the idea of Duty, and habituating him to act up to his lights, the school is a noble instrument of moral training.

A good school, especially if it be of fair size, is a little world, where *every scholar may learn some great lessons for life-conduct.* Children who "require very peculiar treatment," for example, learn that wilfulness, petulance, and "sulks" bring punishment on those who indulge in them. Other spoiled children learn that the world was not made for them alone, but that their fellows go on their way without attending to their whims, and that it is expedient to accommodate themselves to general laws, and make the best of them. Every good teacher studies individuals, and deals with them according to his wisdom, but he also recognises *the moral gain each pupil obtains by subjecting all to the same treatment* within limits.

School allows children to measure themselves against one another under watchful eyes. It affords abundant example or illustration of industry and idleness, honesty and falseness, and of honourable and dishonourable conduct, and teaches frequently that perseverance is more reliable than brilliant parts.

On the other hand, unkindness, bullying, and many meannesses are found in schools, especially in the playground, which is "either a moral-training ground, or a mischief ground."* Many traits exhibit themselves in the playground, and often suggest subjects and illustrations for Moral lessons. *The playground—Stow's "uncovered school-room"—should always be under supervision,* evils checked, and wrongs righted. Prevent mischief by stimulating healthy enjoyment, and encouraging animated play; a teacher who can suggest and join in a likeable game adds to his influence thereby. Rudeness, unkindness, and other forms of bad conduct must be steadily repressed, and forbearance, courtesy, generosity, kindness to little ones, and general good manners inculcated.

The school, however, is not the only influence, nor yet the chief influence in Moral Education. It may do much, it cannot do all, in settling habit and forming character.

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* Stow.

The best school Discipline is imperfect; teachers are fallible; outside influences are often too strongly antagonistic; besides, character is not settled during school-life.

But the school should *bend* the young nature towards Right; it can influence the Tendencies or Inclinations, and do no little to settle early Habit, or give the first directions to Character.

"As the twig is bent, the tree is inclined." "Train up a child in the way he should go, and when he is old he will not depart from it." Prevention is not only better, but easier than cure in Morality; it is harder to unlearn than to learn in anything, but bad beginnings in Conduct are serious obstacles, or active hindrances.

N.B. The following paragraphs bearing on Religious Education form a section of themselves.

Religious Education, in its proper sense, requires its own *Instruction* and its own *Training;* both should go on together, or with equal step, so far as the learner's power allows; *they cannot, indeed, be absolutely separated.*

(1) Religious *Duty* has to be made clear, (2) Religious *Motives* to be developed, and (3) Religious *Practice* or suitable Action from suitable Motives provided for so far as it can be. It is an advantage that Knowledge and Feeling, Instruction and Training, cannot be kept wholly distinct.

Religious Instruction consists in imparting Knowledge on Religious matters, or in teaching Religious truth, showing Religious Duty clearly, and in inculcating correct ideas about the Supreme Being. This is the *Intellectual* side, that with which the "Head" is concerned.

The instruction would be based on the Bible.

The Method would include the Bible or Scripture lesson, and Bible-reading.

(*a*) *The Scripture Lesson* would be given on the plan of an oral lesson in any other subject, except that it would be shorter as a rule, and a more reverential and solemn tone would pervade it. Matter would have to be selected and arranged, illustrations provided (these should usually be drawn from the Bible itself, though the teacher may often do well by bringing in illustrations from other sources), and means taken for clearing up difficulties. The ordinary arts of teaching would be called in to make the lesson a success.

Schemes or *courses of such lessons* had better be drawn up to give system to the teaching ; each lesson in the course then forms part of a whole, and can be dealt with, not only with reference to its own immediate subject, but also with reference to those preceding and following it.

Narratives, historical scenes, parables, remarkable *emblematic* statements, form the best subjects for these lessons ; truths may be brought in and enforced in a telling way in connection with them.

> *The spirit and manner in which these lessons are given,* will be the great factors in making them effective as appeals to Religious Motives, and thence to Action. *Feeling* is far above *Knowledge* here.

(*b*) *Bible-reading* is a good basis (sometimes the best) for Religious Instruction, when suitable portions are selected, and the teacher explains and illustrates as the reading proceeds. Sometimes, as in Psalms i. and xxiii., little is wanted besides the reading ; *much* talking would mar the beauty and spoil the effect, though some "picturing out" is desirable.

Bible-reading should never be allowed to degenerate into anything resembling an ordinary reading-lesson, nor should the Bible ever be used merely as a reading-book. When scholars are unable to read easily, the teacher should take the reading upon himself ; indeed, this may be the best plan in every class. But if the scholars read, there must be no place-taking, and a reverent style must be demanded. A solemn recognition of the peculiar importance and authority of what is read, should be evident in tone and general bearing.

Bible-reading "without note or comment" must be kept to very simple extracts, and must be exceptionally well done, if it is to serve a good purpose. The whole meaning of a passage often turns on the meaning of a word or two, and, as Stow says, if these are not understood, the passage might as well be read in a foreign tongue.

> If catechisms, or books with distinctive dogmatic statements are used, their dogmas should be illustrated and explained on the general principles applicable to all teaching, and exemplified under *a* and *b*. But matters of controversy are out of place in Elementary Religious Instruction. The leading Religious doctrines or first principles can be understood, and should be firmly fixed ; about these there need be no dispute with children.

Where the teacher can, he may follow Dunn's advice with advantage, and have some portion of the Bible, however short, committed carefully to memory every day. Stow's remark, however, is worth notice : "Storing the Mind with Scripture texts is *Teaching* or Instruction,—seeing that the child practically does the things as they are required in real life, the process is *Training*."

"*Bible Training* is not simple *reading*, although the passage must be

read or repeated. Nor is it mere *telling* or *explanation*, although the meaning must be told and explained, but not entirely by the master; nor is it mere *questioning* by the master, *and answering* by the scholars, *vivâ voce*, or what may be gathered from a printed book; and yet questions are put, and answers received, but they are mixed with ellipses by a particular process, and in such a way as that instead of the master trainer drawing the lesson, the children are required and enabled to do so to him in their own language, more or less simple. The being able to do this is the proof that the whole subject matter has been clearly pictured out, and rendered visible to the mind's eye of the children.—The theory and practice of Bible Training proceed upon the principle, that nearly every passage of Scripture, when naturally pictured out in words, explains its own meaning."*

Religious Training includes cultivating the Religious Sentiment by awakening the sensibilities, arousing the Conscience, associating Pleasure with Religious exercises, and thus endeavouring to secure the performance of Religious Duty.

The Religious Sentiment furnishes the *Emotional* element, it deals with the "Heart," and is the Prime Motive to Religious action. *Children "act not from what they know, but from what they feel."*†

The leading idea in the Religious Sentiment is the kindly providence and goodness connected with the *Fatherhood* of God. With this is connected that legitimate Fear which springs from the idea of God as *Ruler, Judge*, and *Distributer of Reward and Punishment*. His *attributes* and *perfections*, holiness, justice, power, wisdom, omniscience, increase our reverential awe. In the Christian scheme, man's alienation from his Father—God by sin, and his restoration by the Saviour, bring into marked prominence the Divine attributes, goodness, justice, and holiness.

Wise teachers will *dwell on the kindness and goodness of the Heavenly Father*, and make it the prominent feature in this part of their teaching. His other attributes will be brought forward in due time and place, to complete the Sentiment we desire to form or develop. But it is a pitiable mistake so to manage Religious teaching as to make children afraid of a terrible, revengeful God, instead of causing them to delight in their Father as He is revealed in the New Testament. His loving-kindness should be so presented as to awaken a responsive love, whilst His perfections

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* Stow.

† Moseley.

inspire awe and reverence mingled with trust. The duties of obedience, prayer, and of striving after holiness should be inculcated.

The performance of Religious Duty has an *inward* and an *outward* aspect.

The essential act is secret and *inward*, consisting in an Emotional movement or stirring of gratitude, reverence, and love towards the kind, perfect Father. This may go on with or without external demonstrativeness.

Outward actions must spring from the inner Emotion, if they are really Religious. Unfortunately they may be formal only, and prompted by lower Motives; in this particular, the secret places of the heart are for a man and his God.*

The leading agencies for Religious Training are :—

(*a*) *Devotional Exercises, Divine Worship.* These stand first amongst agencies for Religious Training, provided they are conducted in a right method and spirit. Reverential enjoyment marks true devotion. Spending a few minutes thus at the beginning and end of the school-day, gives a fine tone and sanction to the work.

But these exercises do incalculable harm if they be irreverent, and much harm if they be formal and unmeaning. Knowing the possible irreverence and incipient hypocrisy which may, and which sometimes *do* come, some teachers object to use prayers in school. *The way in which they are conducted goes far to determine their effectiveness.* On all accounts, the head-teacher or senior available teacher should take the management; he should be very simple, solemn, brief, and impressive.

(*b*) *Constant reference, tacit or expressed, of everything to God's Will as revealed in His Word.* As the question "Is that Right?" often brings Moral Duty to the front, so the corresponding question, "Will God be pleased with that?" pushes Religious Duty close home. Here, again, we must be cautious not to detract from what we would exalt,—*God's Will as the standard*,—by ill-considered speech or action. The standard is to be understood, or applied *tacitly* as a rule, and only be brought forth formally in connection with an act except very seriously and even solemnly. Such *outward* application as the teacher may make only rarely for fear of its being undervalued if made common, is different from the *constant* personal testing which the religious man is supposed to apply to all his acts. The teacher's aim is to develop this habit, partly by teaching it as a duty, partly by occasional appeals to the standard in actual work, but the absolute practice, the real constant testing, springs from an *inward* force, which the teacher cannot control.

* See *Tom Brown at Oxford.*

(*c*) "*Dealing with secular subjects in a religious spirit*" is really part of the foregoing. Trivial, commonplace Duty is exalted and ennobled by being "done as unto the Lord," and he who renders it, has his Religious Feelings exalted, by being brought in spirit nearer his God.

(*d*) *All the agencies for Religious Teaching* have an influence as Training agents also.

Further Suggestions.

Moral and Religious Education take time. It is not complete during school-years, and what is done then, if it is to be sound and robust, will have to be done *slowly*.

Moral and Religious development has its seasons and stages; exalted attainment is a *growth*, it is a work of time, and would be unnatural in children. Teachers have no reason to be disappointed if children are childish in these as in other matters.

There are graces peculiar to childhood, which are very lovable; there may also be a "*moral precocity*," which is untrustworthy, though seductive.

No little "*cramming*" in things pertaining to Morality and Religion goes on. This generally arises from the unwise, but else commendable zeal of teachers, who feel strongly the supreme importance of their work, but who forget they are dealing with children. To expect children to have the experiences and feelings of adults on these matters is absurd, and to encourage them in imagining or talking as though they had, is highly reprehensible. To feed infants in Morality and Religion with meat instead of milk—to dwell on dogmas and principles instead of examples and lively illustrations—is to sin against nature. To expect a child to enjoy and assimilate as much as a man can at a meal argues a great lack of judgment. Yet teachers, Sunday-school teachers especially, go astray continually here.

As in things physical and intellectual, so in the realm of Morals and Religion, *slow and gradual increase of power* is the rule. School time is seed-time; it is ours to sow the seed, and tend it during its early growth; perhaps we may not see the harvest at all, and certainly we should not be in a hurry, or be over-anxious to see results. Results, such as many would fain see, can come only as the "far-off harvest of toil and of tears."

Set a high standard, but *take common-sense views* about children.

We may look towards "Be ye also perfect," but we must be forbearing, and patient, and not greatly disappointed when we find children falling far short of this supreme standard, which we ourselves fail so palpably to reach.

Inculcate the idea that Merit commonly commands esteem.

At the same time, discourage the notion, inculcated in many story-books, that Virtue and Good-conduct always meet an appropriate Reward. Our aim is to accustom our pupils to *Do Right because it is Right, i.e.*, to act according to honest conviction.

Some years ago the writer was present at the evening devotional exercises in a private college for boys, where this lesson was admirably taught by the principal. A short extract, *Matt.* xiv., 1–12, the account of John the Baptist's death, was read, verse by verse, by a few of the older lads. When the reading was over, the teacher pointed out that John had lived a hard life, and had now suffered an unjust and cruel death, although he had striven to do his duty, and had done much good. He spoke slowly and impressively, and the boys felt their teacher's emotion was true. Altogether he said only a little, but when, after a pause, he asked, "*Who would you rather have been, John or Herod?*" the class drew a long breath; nobody spoke, but hearts responded. The teacher had gained his end; he had led his boys to see that the consequences of doing one's duty are often very hard, and yet that true nobility and heroism consists in devotion to duty in spite of consequences. There was no need for further speaking, indeed, the effect would have been spoiled by it. But there is no doubt, that in the prayer which followed, many of the lads joined heartily in the petition that they too might do their part manfully, when their trial came.

Teachers should collect other instances of the same kind, including the Greatest of all, to enforce the necessity or nobility of doing Right, and of the likelihood that one's action may be misinterpreted and ill-rewarded. Virtue has to be its own Reward; the benefactors of the race frequently earn for themselves evil and trouble, and often ill-will.

At the same time, the *general* rule that Right-doing is followed by appreciative good-will from all who observe it, should be made much of. Examples, for use in class, can be gleaned in abundance from many sources.

Avoid preaching; above all, *avoid calling attention to the fact that you intend to preach.*

Moral and Religious teachings almost always come best and sink deepest when they are informal. Parents can teach their children best by the general tone of the house, and by their actions and conversation whilst the children are present. When a special lesson has to be conveyed, they may often turn the conversation upon it, in a way which school-teachers cannot adopt.

Teachers will produce the strongest Moral Effect by thinking their

lessons out well, making their precepts brief and sententious, and bringing them in without fuss. If we can lead children up to a point where the moral lies on the surface, or where the inference is obvious, we may leave them to pick up the lesson without seeming to guide them further.

Bain, quoting Isaac Taylor, remarks that "the well-meant but futile '*Hence we should learn*,' and '*How important it is ever to remember*,' answer no purpose whatever in education, except that of giving the *congé* to the minds of the children,—it is a '*Now you may go while I preach.*'"

Many teachers, Sunday-school teachers especially, have an overmastering anxiety to reach the heart, and touch the spring of action. But disastrous consequences often follow from misdirected earnestness. Good intention, earnestness, and piety may be joined with unwisdom, and the teacher's style of dealing with Moral and Religious truths may produce a revulsion amounting to disgust.

Classification of Duties. Knowledge would be more definite, and teaching made more easy or effective, if an enumeration of leading Duties could be made, and subordinate Duties be properly connected with them.

Different schemes have been propounded by "different authors. The oldest scheme is the Four Cardinal Virtues—Prudence, Courage, Temperance, Justice. (*Plato.*) The modern Christian moralists usually adopt the division—Duties to God, to Others, to Self."* Duties to the lower Animals are sometimes added.

The commonly accepted modern arrangement involves a cross-division, inasmuch as all Duties are regarded as duties to God by a religious man. Again, Prudence and Sobriety are essentially Duties which a man owes to himself, yet the imprudent or intemperate man wrongs Society as well as himself.

Broadly speaking, Duties may be arranged for practical purposes, and for lessons in school, much as follows :—

(1) *Duties to God.*—Veneration, Love, Worship.

(2) *Duties to Others.*—Justice and Equity; the "Doing to others as we would be done by;" Truthfulness or Veracity in word; Benevolence or Love for one's neighbour.

(3) *Duties to Self.*—Self-preservation, Prudence, Temperance, Purity, Courage.

(4) *Duties to the lower Animals.*—"Humanity."

Many forms, subordinate or otherwise, might be mentioned, and must indeed be treated, such as Honesty, Gratitude, Generosity, Diligence, &c.

* See Bain, *Mental and Moral Science*, pp. 433, 472.

Some are only other names for virtues mentioned before; others may be connected with more than one fundamentum.

Prudence and Duty on the Utilitarian view. Motives to action fall under one or other of these divisions.

I. **Prudence.** Prudential Motives constitute "the highest and most comprehensive regard to Self;"* they spring out of the *Consequences* actions entail upon the *doer*.

When Motives conflict, Prudence induces us to take that action which will, on the whole, result in the greatest happiness, or the least discomfort to us.

Prudence is developed and trained by the following agencies.

(1) *Natural aptitude*, or facility for remembering pleasure and pain as the results of conduct, influences the rate of acquirement.

(2) *Education*, including Instruction, Example, Advice, and Restraint under Authority,—the result will be Knowledge and Habits of Self-control.

(3) Actual *Experience* of the good and ill consequences of actions.

(4) *Public opinion*, as expressed by the words and actions of those about us, and as reflected in current literature.

(5) *Reflection* on one's past conduct.

II. **Duty**, or Obligation, consists in regard for others; the *Consequences* of our actions, so far as they affect our fellows come under this head. Honesty, truthfulness, abstention from injury are examples.

We may not interfere with the happiness of others in aiming at our own happiness.

The chief influences urging us to Duty are:—

1. *Sympathy*, which induces us to attend to others' feelings.

2. *Prudential Motives*, the chief being (*a*) *Fear of Punishment* for injuring others, and (*b*) *the feeling that it pays best* to abstain from injury to one's neighbour.

Action under Prudence and under Duty may be interfered with by one's Feelings; Prudence itself may also, to an extent, militate against Duty.

For example, Anger may induce us to pass beyond the bounds Prudence

* See Bain, *Mental and Moral Science*, p. 392, &c.

would set; strong Desire to possess a thing frequently leads to Dishonesty.

Avarice, an extreme and perverted form of careful Prudence, is detrimental to rendering kindness to another, or even to paying him his due.

Instruction, Training, Practice under Authority, must be resorted to, that the desirable may be developed and the undesirable repressed.

PHYSICAL EDUCATION.

Physical Education is concerned with the proper development of the bodily frame.

It aims at "rearing a healthy human being, by all the arts and devices of nursing, feeding, clothing, and general regimen."*

Necessity. A degree of physical vigour is absolutely essential for the proper performance of daily duty, manual or mental.

"*The first requisite to success in life is to be a good animal.*"† This principle often seems to have exceptions, but it is true, on the physical side at least. Most men earn their bread by manual labour ; a weakly physique will interfere with their success, even in plying their tools. The body is the instrument of the Mind ; if the implement be poor, it is hard to translate ideas and intentions into acts.

Mind work is influenced by the condition of the brain, and of the body generally. If the body be weak or jaded, or in ill-health, the Mind suffers with it, and is indisposed to work, or is incapable of it. Anything got out of a jaded horse, involves extra whipping, and a wasteful expenditure of force. Business men and professional men know the advantages associated with recruited bodily energies ; students have a similar experience. Teachers find it hard to do much with unhealthy or tired children. Indeed, however good the intrinsic quality of the brain may be, its work will be inferior, unless there be sufficient bodily vigour.

Mens sana in corpore sano—"*a sound Mind in a sound body*—is a short but full description of a happy state in this world. He that has these two has little more to wish for ; and he that wants either of them will be but little the better for anything else.—How necessary health is to our business and happiness ; and how requisite a strong constitution, able to endure hardships and fatigue, is to one that will make any figure in the world, is too obvious to need any proof."‡

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* Bain, *Education as a Science*, p. 3.

† Spencer, *Education, Intellectual, Moral, and Physical.*

‡ Locke, *Thoughts on Education.*

Place of Physical Education in a complete Scheme. Locke, Combe, Spencer, and others who deal with Education in its broadest sense, put Physical Education in a prominent place in their systems.

Locke devotes the early pages of his *Thoughts on Education* to matters connected with the preservation and improvement of health from infancy upwards. He discusses such subjects as Air, Exercise, Sleep, Diet, Clothing, in a style which his medical education fitted him for, but which we should now expect to find in books on nursery treatment, rather than in works on Education.

Combe insists strongly on the necessity for basing Education on Physiology; his voluminous writings constantly urge (or assume) the necessity of caring for bodily health as an essential part of Education.

Spencer has a valuable and suggestive chapter on Physical Education in his work,* written with special reference to the existing peculiarities of home and middle-class school-life. He speaks of Diet, Clothing, Exercise, Mental application, and other points affecting physical well-being, and advocates "physical morality," "the belief that the preservation of health is a duty," and that "all breaches of the laws of health are physical sins."

The School and Physical Education. The school is not to charge itself with everything. It may and should do something for the physical development of its scholars, but what it does in this direction is incidental and informal, rather than direct.

Public opinion may change so far so to alter school-aims, and remodel school-practice; systematic gymnastic training may come to be regarded as essential, and may be introduced and provided for in elementary and other schools, but this is not the case as yet.

All who are entrusted with the care of children, teachers amongst them, are responsible for their welfare in all points, so far as their opportunities go. The schoolmaster is right in regarding Intellectual and Moral Education as his peculiar duty, but he is not to lose sight of the other side; he should *see that all things connected with his school, so far as he can influence them, are conducive to high spirits and bodily vigour.*

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* Spencer, *Education, Intellectual, Moral, and Physical.*

Evils may exist, which are beyond the teacher's control; his pupils may be ill-fed, or scantily clothed; or his school may be badly placed, or insufficiently lighted, or the ventilation or drainage may be defective. But many things are within his power; he can provide for change of posture, for physical exercises, and for alternation of work and play. Besides, a little consideration, and sometimes a little ingenuity, will enable him to counteract some evils (ventilation, temperature, light), and to make the most of favourable circumstances.

A certain amount of physical health is essential to profitable and enjoyable bodily action, and to good mental work.

Teachers are not expected to enquire into the causes of this; nature and the constitution of modern society puts duty of this kind on parents.*

Bain, speaking of Physiology as affecting Education, notes amongst other things:—

Brain, the Physical basis of Mind, *must be nourished*, if it is to do its work, and, like other organs, requires both exercise and rest.

The body is an aggregate of organs, of which the *brain* is one. All *suffer* if the body be fatigued, all are *invigorated* when the body is refreshed.

Bodily organs may be *relatively unequal in power;* this inequality may be natural or acquired. *Some organs may also appropriate more than their fair share* of nutriment, and thus grow abnormally, at the expense of the others. Brain, for example, may be nourished at the expense of muscle, or of the digestive organs, and *vice versa.* Feeling and Knowledge also may compete for brain support.

"On the physiological side, Memory or Acquisition is a series of new nervous growths, the establishment of a number of beaten tracks in certain lines of the cerebral substance. Now, the presumption is, that as regards the claim for nourishment, this is the most costly of all the processes of the Intelligence.—Success in acquirement should be the work of rare, choice, and happy moments; times when the cerebral vigour is both abundant and well-directed."*

Teachers should have a reasonable acquaintance with human **Physiology**, and with the **Laws of Health**; they should know the leading "physical facts connected with the child's nature." Such knowledge may give frequent useful checks, cautions, and hints.

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* *Education as a Science*, ch. ii.

"No teacher is fully and conscientiously qualified for his duties unless he has made himself acquainted with the nature and general laws of the animal economy, and with the direct relation in which these stand to the principles of Education." "Physiology ought to constitute the basis of all Educational plans."* The efficiency of the brain depends in a great degree on the healthy condition of the stomach, lungs, heart, and skin, and this condition is very much affected by the teacher's application of the laws of health as founded on Physiology." (*Payne.*) Every one who superintends a machine should know something of its structure and working.

It is even more important that teachers should know what circumstances are favourable, and what antagonistic to health, or that they should know the general principles conducive to a healthy frame.

Physiology and Hygiene *should be taught.* A course of Physiology is an essential part of a rational Education.†

Lessons may be simple, and yet sound and scientific. Good would certainly follow if when our pupils leave school, they carry with them a little trustworthy knowledge of *what they are,*‡ of their bodily structure, of the uses of their various organs, and the conditions of their healthy action.

The duty of taking care of the health, and the means of doing it,—the dangers and unseen foes to health that lurk about us,—prevention being better than cure,—and other forms of hygienic doctrine ought certainly to be enforced. The necessity for fresh air in plenty, exercise, cleanliness, warmth, food, good sanitary arrangements, &c., should be known by every elder scholar. If this were the case, the crop of fevers and zymotic diseases would decrease; general health and physique would also improve.

Hygienic teaching should be connected with Physical Science, and with elementary Anatomy and Physiology; the *practical* side, however, should be most prominent.

The physical frame, brain included, can *profitably* respond to moderate demand only.

Excessive **mental application** *brings serious physical evils.* Loss of sleep, and troublesome dreams are common results of overstrain; far more serious consequences, such as indigestion, defective circulation, impaired

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* See A. Combe, *Principles of Physiology.*

† Spencer, *Education, etc.*

‡ G. Combe considers this a leading aim in Education, but he uses the expression with reference to the whole nature.

nerve-action, debilitated muscle, and weakened mental power, follow when the strain is excessive in *intensity* or in *duration.* The character of the work, the healthfulness of the room and surroundings, the natural strength and bodily and mental habitudes, and other circumstances must determine the *amount* of time which may be fairly devoted to study.

Muscular exercise "*consists properly in the alternate contraction and relaxation of the fleshy fibres.*—A state of *permanent contraction is both unnatural and impossible;* the most fatiguing muscular employment to which one can be subjected, is that of remaining immovable in any given attitude."* *Posture* in school should therefore be *easy, and be frequently changed,* or "weariness, debility, and injury to health will follow."*

Violent exercise is always pernicious; *indiscriminate gymnastics* is likely to be harmful. A. Combe remarks:—(1) *Muscular exercise* "*should spring from, and be continued under, the influence of an active nervous or mental stimulus;*" games, walks, &c., should have an object. (2) "*As much variety of movement as possible*" should be involved in school exercises, and games in the playground. (3) *Exercise* "*should always be proportional to the age, strength, constitution, and habits.*" *Food,* also, should be proportional to exercise; exercise should not come just before or just after a meal.

All lessons and all exercises should stop short of the point of absolute fatigue.

With older scholars demand may, and ought to be continued after the stage of indifference is reached, or for some time after the first burst of energy is exhausted. This is a form of Moral Discipline, typical of much that awaits them in life. Short lessons, short drill, brief strain, is the rule for young children. *Symptoms of discomfort and tedium must be watched for.*

Bodily restraint should not be continued until it becomes painful.

Good Intellectual work requires that animal vigour should be curbed. This restraint may amount to discomfort; if so, Attention is called off the proper subject. Arrangements should be made for changes of posture to relieve the muscles.

Alternation of exercise and rest is essential.

Proper muscular exercise consists of such alternations (see last paragraph),

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* A. Combe, *Principles of Physiology.*

followed by an interval for rest, before real fatigue sets in. Brain and nerve matter have to be dealt with on the same principle.

Changing the direction of demand in details is often a useful form of alternation, *i.e.*, from sitting to standing, from arms folded to hands behind, from stillness to movement and extension exercises.

Alternation of studies gives relief; the Brain gets what partly answers for rest, if the directions of its working be altered frequently, *i.e* , if the subjects taken be changed at short intervals, especially if mechanical and intellectually exacting subjects be alternated; thus Arithmetic may be followed by Geography.

More direct alternation of demand on muscle and on brain is forced upon us as teachers. We find that better results are obtained, if we cease from taxing the brain for brief intervals, and recall the blood from the nervous system to the muscles by *physical exercises.*

> *Physical exercises and extension movements,* well contrived and well managed, *help Order* by systematizing movement, and by promoting exact Obedience; they act incidentally, therefore, as means of *Moral* training. With young children lessons may be stopped sometimes for a minute's exercise, and usually there should be some exercising between lessons. *Health is promoted* by breaking mental strain, and changing demand, by exercising the muscles, and raising the spirits. *Posture, carriage, command of limbs* are improved by sitting and standing according to directions, by quiet movement, by marching, and by using the limbs at the word of command. *Singing* increases the good effect of many physical exercises, helping the rhythm, giving completer change to thought, relieving, animating, cheering, and inducing good spirits. Children's faces, after a good change with song, are always aglow with good-humour.
>
> Systematic and scientific *Gymnastics* may be required for special forms of development; weak limbs may need such treatment. Gymnastics should be under the charge of a qualified teacher, one acquainted with physiology, and with the purpose of the different gymnastic movements.

Work and play. Physical energy has to be restrained if good intellectual work is to be done in school; some of the pent-up force is drawn off by well-timed exercises and movements during school-hours, but it bursts forth as soon as children get into the playground, or as soon as restraint is removed. Play is the response to a natural prompting, which school-restraint intensifies; school-work makes play more enjoyable, whilst an interval of recreation and vigorous play prepares the way for fruitful school-work. Reasonable time should be allowed for play.

The natural, unconventional, self education of *play* does most towards exercising whole groups of muscles, and providing for that variety of movement which was urged in the last section. There is danger of over-exertion, which teachers may partially check; there is much more likelihood, however, of insufficient exercise for certain muscles, which a series of gymnastics would supplement or remedy.

Absolute cessation from strain, complete relaxation or relief of muscle and brain from active exertion, is a physical necessity. *Dreamless sleep* is "tired nature's sweet restorer,"—her alternative for healthy physical and mental exercise.

Posture in School. Sitting is the most general convenient posture.

School fittings are arranged to allow for this.

There is a tendency to *overmuch sitting*, especially in the higher classes; this should be recognized and met. *Oral lessons, and much writing*, both characteristic of our modern systems, induce sitting.

Discomfort is one consequence of constrained posture; relief would often come from standing during Reading and Oral Lessons, although pupils as a rule are disinclined to stand. Marching is a good corrective for physical constraint arising from one posture.

But *bad position when sittin* may lead to serious injury. Awkward placing of the head in *Writing* may affect the eyes, and help to produce short-sightedness. The body and feet are often ill-arranged; the feet doubled under the body, and the body twisted and thrown forward awkwardly and injuriously. (Mülhauser's "position drill" would prevent this.) Seats should have backs, and children's feet should rest easily on the floor, or on a suitable support when sitting.

It is *not well to encourage writing on a gallery*, if children have to hold their slates. Yet it is hardly to be avoided at times. Teachers, in this case, must do the best they can to get the children to hold their heads up. Standing is better than sitting, if slates must be held.

Reading forms a gymnastic exercise for the lungs and chest. The reader should stand erect, feet together, knees pressed back, head up, chest forward and full. The book should be held at about eighteen inches distance, or a little less, and at a convenient height.

The Eye is very liable to injury from causes found in schools.

Myopia, or Shortness of Sight, is certainly increasing, both in the number affected, and the degree of affection. This, and other forms of eye-ailment, are largely owing to (1) *Insufficient light*, (2) *Small or bad print*, (3) *Unfavourable postures.*

Abundant light without glare, is the first consideration. Cohn recommends thirty square inches of glass to every square foot of floor. The best light is that admitted from the ceiling.

Bad print. Many low-priced books are printed on inferior paper and in indistinct type ; the result is a degree of confused blurring from the letters on the next page showing through the paper, and mingling with the defective printing on the page which is being read. Very small type is objectionable, as also is too wide a page. Other school-work may affect the eyes, such as fine needlework or minute drawing.

Unfavourable posture, &c. Bending the head forward tends to produce congestion of the eyes and head generally ; holding the face close down to a book, copy-book, or slate, twisting the body, standing directly in front of a window, are also to be avoided.

Ophthalmia is ministered to by ill-ventilated, overcrowded rooms. Cold (especially after being in a hot room), heat, strong light, and dust (especially when associated, as they often are in Australia), and material conveyed by flies, are some of the causes of this disease. It is very infectious, and those affected should be kept away from the healthy. Towels in lavatories used by infected children often carry the disease. (Ordinary Ophthalmia is commonly called "Blight" in Australia.)

The Ear should not be meddled with.

If a child put a piece of pencil or other similar substance into his ear, let a surgeon remove it, unless you are sure you can do it readily. The obstruction could be so easily mismanaged, and the ear perhaps permanently injured, that it is better to have skilled advice. Picking the ear, with the finger, or with pins and the like, and closing it with wool, tend to irritate the organ, and to make the internal ear more sensitive to cold.

Boxing the ear is a dangerous practice. Compressed air may be driven into the auditory canal with such force as to rupture the tympanic membrane.

The following have been mentioned as "**School Diseases**," often found in Boarding Schools.*

Myopia.

Congestion of Blood in Head—head-ache, nose-bleeding (from bending forward).

Curvature of Spine—(from much stooping forward).

Affections of Respiratory System—consumption, catching cold (from stooping and insufficient exercise).

Affections of Digestive Organs—indigestion (from overstrain, bad posture, want of exercise, &c.)

Contagious Diseases.

Injuries by Violence.

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* J. F. Payne.

PSYCHOLOGY AND LOGIC.

(1) **Psychology, or Mental Philosophy,** is the Science of Mind.

Its office is to enumerate the mental faculties, to unfold their nature, and to observe and explain their operation. It analyses and classifies the phenomena of Mind, considers them in their mutual relations, and investigates their mode of generation.*

(2) **Logic** is a branch of the wider science, Psychology. Different views are held as to its legitimate province, and different definitions are given in consequence.

"Logic is the science and also the art of reasoning" (*Whately*). "Logic is the science of the necessary laws of Thought" (*Thomson*). "Logic is the science of the laws of Thought as Thought" (*Hamilton*). "Logic is the science which is concerned with forms and methods of reasoning, and the establishment of truth by evidence" (*Chambers' Ency.*). "Logic is the science of the operations of the Understanding, which are concerned in, or are subservient to, the estimation of evidence;" and again, "Logic is the science of inference" (*J. S. Mill*).

Strictly speaking, it is not the business of Logic to explain the origin and formation of our Notions, or to deal with Memory, or explain the nature of Perception, &c. The logician assumes "as data, the laws and products of Thought, as the mathematician assumes as data, extension and number, and the axioms by which their relation is determined, both leaving to the metaphysician the enquiry into their grounds."*

Yet it is usual in logical works to deal more or less fully with certain matters, which, in strictness belong to psychology proper. For example, logicians commonly deal with the formation of General Notions or Concepts, whereas Logic is properly concerned with the complete products, and the names attached to them. A logician, however, who desired to give completeness to his work, would naturally look at his subject from the psychological as well as the logical side.

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* See Hamilton, *Logic*, chap. viii.

Logical Phraseology. Some regard Logic as concerned essentially with *Thought*, others as concerned essentially with the *expression of Thought and Language.*

A thinker may hold either opinion, but he cannot consistently hold both at the same time.

Different writers employ different phraseology; some use words in a different sense from that in which others use them.

This perplexes the student frequently. Hamilton, for example, who thinks Logic is primarily concerned with Thought, uses "*Concept*" and "*Judgment*," where many who look on Logic as concerned rather with the expression of Thought in language, would use "*Term*" and "*Proposition.*"

For logical purposes, higher Thought may be held to include *Conception*, *Judgment* and *Reasoning*. The products of these three forms (or degrees) of Thought, when expressed in words, constitute the subject matter of Logic, except that some terms, not general, have to be dealt with.

Thus, (General) *Terms*	(in Logic)	correspond to	*Concepts*	(in Psychology).
Propositions	,,	,,	*Judgments*	,,
Inferences	,,	,,	*Reasonings*	,,

Language aids Thinking. *Thinking is a kind of internal converse.*

Rudimentary Thought, simple Perception, the mere consciousness of elementary Difference and Similarity, is possible without employing words. But we cannot proceed with higher Thinking without words; they are wanted at every stage; we think in words.

Language shortens Thinking, by enabling a single word or concise expression to be substituted for a complex Notion.

Language enables us to analyse and explain complex Notions; Definitions and Descriptions exemplify this.

Language records Thought, and preserves its results for future use; we are thus able to use others' thoughts as well as our own.

Language enables us to let others know what we think, or to communicate our thoughts to our fellows.

Thought and Language are commonly strong or weak together, though not universally so. Imperfection in one *tends* to produce corresponding imperfection in the other. A poor vocabulary interferes with ready and exact Thinking; loose and inexact Thought is accompanied with looseness of expression. (For valuable information and hints, see Hamilton, *Logic*,

ch. viii; Fowler, *Ded. Logic*, ch. iii.; Thomson, *Laws of Thought*, pp. 27–48; as well as Locke's *Essay on Hum. Und.*, b. iii.).

Mental Operations and Logic. Logicians recognize three kinds of Thought or operations of Mind. These are:—

(1) **Simple Apprehension** is defined as "the mere intellectual conception of a thing." As a *Faculty* it includes Perception and Conception, with Re-presentation. The *operations* of the Faculty give results which, expressed in words, are **Terms.**

(2) **Judgment** consists in comparing two objects, or two notions derived from simple Apprehension, and pronouncing whether they agree or differ. The expression of a judgment in words is a **Proposition**, which consists of two terms (termini; *Subject* and *Predicate*) with a Copula.

(3) **Reasoning** or **Discourse** consists in proceeding from one or more Propositions (*Premisses*) to a Proposition (*Conclusion*) different from the Premiss or Premisses.

Terms. A term is a word, or set of words, which may stand as the Subject, or as the Predicate of a Proposition.

Iron is *a metal.*
What-is-past-and gone is *a-something-which-cannot-be-recalled.*

Kinds of Terms or Logical Names. Mill arranges Names according to six different principles of division.

(1)
- *Individual or Singular*, can be affirmed truly, in the same sense, of only one thing; *Alexander the Great, Paris.*
- *General or Common*, can be truly affirmed, in the same sense, of each of an indefinite number of things; *man, table, queen.*
- *Collective*, can be predicated only of all the members of a group taken together, and not of the individuals composing the group; *regiment, flock.*

(2)
- *Concrete*, stands for a thing; *man, table, queen, Queen Victoria.*
- *Abstract*, stands for an attribute of a thing; *whiteness, old age, honesty.*

(3)
- *Connotative*, "denotes a subject, and implies an attribute" (The Connotation of a term may be regarded as what it means, signifies, or implies); *man, queen, God.*
- *Non-Connotative*, "signifies a subject only, or an attribute only" (Proper names, so far as they do nothing more than mark a person or place, and all names of attributes or feelings which cannot be analysed, are Non-connotative); *John Smith, whiteness.*

(4) *Positive*, the simple name of a thing; *man*, *queen*, *Queen Victoria*.
Negative, the negation of a positive name; *not-man*, *not-a-queen*, *not-queen Victoria*.
Privative, the name of something which might be expected to have a particular attribute, but which has it not; *blind-man*.

(5) *Relative* names always exist in pairs (every relative has its correlative); *parent* (*child*), *ruler* (*subject*).
Non-relative or Absolute, all names which are not relative.

(6) *Univocal* and *Equivocal*, have reference to two different *modes of employing* names. "A name is applied univocally with respect to all things of which it can be predicated *in the same sense*; but it is applied equivocally as respects things of which it is predicated in different senses." *File* standing for an iron instrument, and *file* standing for a line of soldiers, might be used ambiguously. *The same word can be used in different senses*, and many faults in Reasoning are owing to this. *Analogical or Metaphorical* names are predicated of two things in significations somewhat similar; a *brilliant* light, a *brilliant* action.

Words which can stand alone as the Terms of a Proposition, are **Categorematic** Words.

Nouns, and Adjectives, and such compound Logical Words as are instanced under "Terms," pp. 568-569, are Categorematic.

Words which must be joined to other words in order to make complete Terms are **Syncategorematic**.

Prepositions and Conjunctions are words of this kind.

Extension and Intension of Terms. (1) *The* **Extension**, *Extent*, *Breadth*, **Denotation** of a Term, refers to *the number of separate things* or individual objects, which the Term marks or designates, or to which it can be applied.

Thus, *animal* has a wider extension than *horse*, there being many *animals* besides *horses*.

(2) *The* **Intension**, *Comprehension*, *Depth*, **Connotation** of a Term, refers to *the fulness of the Idea* associated with it, or to the number of attributes the term includes, suggests, connotes, or implies.

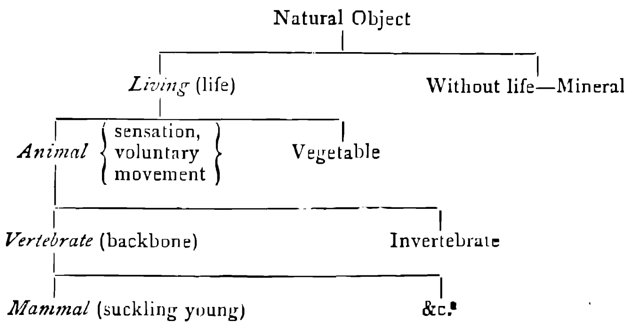
Thus, *horse* has a greater intension than *animal*. A *horse* not only has

the attributes which collectively constitute *animality*, but it possesses *additional qualities which mark it off from other animals*. The sum total of these additional qualities constitutes the Intension of *horse* over and above that of *animal*.

As the Extension of a Term increases, its Intension diminishes, and *vice versa*.

Being or *Entity*, is the Term of the widest possible Extension, for it can be applied to, or predicated affirmatively of every existent thing. But the Intension of the Term is the simplest or narrowest possible, inasmuch as the Idea associated with it is simple existence, and nothing more.

In the following table, observe that something is added to the Idea, or the *Intension* becomes greater as we descend. At the same time the *Extension* decreases, or the number of individuals to which each successive term applies, or of which it can be affirmatively predicated, decreases as we descend.



Definition. A logical Definition is "an expression which explains any Term, so as to *separate it from everything else*, as a boundary separates fields."*

"A Definition is a proposition declaratory of the meaning of a word."†
"A Definition is an exposition of the connotation of a term."

Definitions are (1) *Perfect* when they express the whole con-

* Whately, *Logic*.
† Mill, *Logic*.

notation of a Name, or when they expound all that the name implies. All other Definitions are (2) *Imperfect*, being either *Incomplete* (*i.e.*, not expressing the full connotation) or *Accidental* (*see under Description*).

(1) *A square is an equilateral, rectangular, rectilineal, four-sided figure*,—this Definition is *Perfect*, inasmuch as it expresses the full meaning of the Term *square*. (2) *Man is an animal who reasons* is *Incomplete*, for *man* implies much more than animality and rationality. (3) *Man is a featherless biped*, is a Description so far as it goes, and not a Definition of *man*.

Definition should be *per genus et differentia* (agreement and contrast).

Man - (*is*) - *an animal* (genus) - *who reasons* (differentia).
A Pronoun - (*is*) - *a word* (genus) - *used instead of a Noun* (differentia).

Marks of a good Definition. A good Definition (1) consists of a common or *generic Term* (genus), *together with one or more suitable attributive Terms* (differentia or differentiæ); (2) *applies to every object denoted by the term defined, and to no others;* (3) is *plainer than the Term defined* (therefore, each term employed in the definition must be more simple, or must imply or connote less than the term defined; consequently, it may not contain the term to be defined); (4) is *expressed in suitable language*, not prolix, unduly brief, obscure, figurative, or ambiguous, and "not negative where it can be affirmative."

The following Definitions are objectionable:—
A bird is an animal. (1 and 2.)
Rain is water which fertilizes the earth. (2.)
Law is a lawful command. A net is a reticulated meshwork. (3.)
*The soul is "the Entelechy, or first form of an organized body which has potential life."** (3 and 4.)

N.B. (1) The best Definition is made by taking the *proximate genus*, and the primary characteristic, or *differentia*.

(2) A Definition may satisfy Whately's requirement without referring to the primary characteristic. The Definition then answers its practical

* Quoted by Jevons, *Elementary Lessons in Logic*.

purpose, though it may be logically defective. *Man is an animal who uses fire, Man is an animal who makes his own clothes, Man is a bimanous mammal.* These imperfect Descriptions often serve for Definitions. A Definition might also be logically correct, and yet be of little use to a teacher.

(3) *Only those names whose meaning can be analysed, can be defined.* "A simple notion cannot be defined."* Proper names, and such terms as *whiteness* are indefinable. They may, however, be *described* by means of common terms predicable of them, as well as by designations peculiar to themselves.†

Carlyle was an old man, who wrote "Sartor Resartus," who died at Chelsea, &c. We may essay a Definition of—*Whiteness* is the sensation produced by the complete reflexion of all the solar rays; but it violates Rule 3.

Description. "A Description is an exposition of a Term, which, in lieu of its connotation, gives an enumeration of properties and accidents."†

This point has been dealt with before under the head of Verbal Exposition, Part I.

Division. "A logical Division is the distinct enumeration of the several classes or individuals which are signified by a common name."‡

"A Division is an exposition of the denotation of a Term,"—"expounded, by enumerating, not the individuals (compare Whately), but the smaller groups (or classes) which the Term denotes."

"Common Terms, or Abstract Terms employed as Common Terms," and other Terms transformed into Common Terms, "are alone capable of being divided."§

Rules for Logical Division. (1) *The same principle of division should be adhered to throughout.* (2) *The parts*, or constituent species, or dividing members, *should together be exactly equal to the whole.* (3) *The parts should be distinct;* they should mutually exclude one another.

In other words, the Division should be founded upon, and be governed

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* Hamilton, *Logic*, viii., and Mill, *Logic*, b. I., ch. viii.

† Fowler, *Logic*.

‡ Whately, *Logic*,

§ See Fowler, *Logic*., ch. viii.

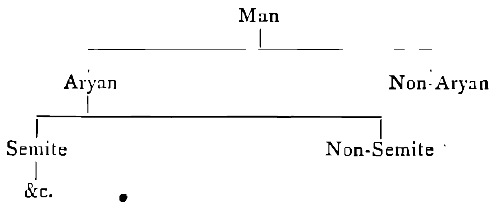
by, ***only one principle*** or basis. ***Nothing*** signified by the Term defined may be ***left out***, and ***nothing*** not so signified ***brought in***. Everything signified by the Term should ***appear in one, and in only one***, of the subordinate classes.

Cross Division is a common fault. It consists in a violation of Rule 3, as just given, and is certainly guarded against only when Rule 1 is strictly observed.

To speak of the books in a *library* as folios, quartos, French works, English works, histories, travels, works on mathematics, &c., would be to make this mistake. *Size*, *language*, and *contents*, three principles of division, are here muddled together. This, however, is a form of *Partition* rather than Division.

To divide *rulers* into monarchs, kings, emperors, presidents, governors, parents, schoolmasters, would be a gross instance of cross-division; kings and emperors are monarchs; governments of states, homes, and schools are also taken as though they were the same.

Dichotomy produces a perfect logical Division, but one which is seldom of much practical use.



Logical **Division, Partition, Enumeration of Individuals,** should be distinguished.

Logical Division is applied to Terms, and represents a purely intellectual process, as will be seen directly under *Classification*. *Partition* applies to a physical whole, and separating it into its physical parts, "as of *man* into head, trunk, extremities," "or of *the world* into Europe, Asia, Africa, and America."* *Enumeration of Individuals*, as of the children in a section, the soldiers in a file, the separate books in a library, &c., is manifestly different from the other two.

Classification is a form of Division. It is "*the arrangement*

* See Fowler, *Logic*, ch. viii.

of things, or our Notions of them, according to their resemblances or identities."*

Classification is thus *based on* observed *Similarity*, or groups of Similarities. Certain marks are taken, and all objects are placed in the class, or are excluded from it, according as they possess these marks or not.

The number of possible classes into which objects may be divided *is almost unlimited.*

So long as any quality is seen to be possessed by any of the objects, and not by the others, that quality may be made the basis of a fresh division, or minuter classification.

A good Classification is appropriate; it serves the classifier's purpose.

A logician might classify words as categorematic and syncategorematic, an Etymologist as root-words and derivatives,† a teacher of elementary grammar arranges them as parts of speech. So the scientific botanist would classify parts as Phænogams and Cryptogams, and then take other points in order, as bases for minuter classification; a gardener, on the other hand, would be justified in classifying plants as annuals, biennials, and perennials, or as herbs, shrubs, and trees, or as evergreen and deciduous.*

In our lessons, also, *the object we have in view must guide us in selecting our basis of classification, and regulate the division we make.*

It is desirable to select as the basis of classification, characters which involve the largest number of other characters. All *natural systems of classification* attempt to do this. *Groups of characters* thus form bases of classification.

Scientists strive to group the objects with which they deal into classes, whose members shall have the largest number of attributes in common, and the fewest dissimilar attributes. There is a great advantage in being able to determine that an object possesses certain qualities because it is seen to possess some one mark or attribute. For example, he who finds a skull with two condyles on its base, and with the lower jaw articulated directly with the temporal bone, may safely infer that the animal to which the skull belonged was a mammal, and therefore vertebrate, having four limbs more or less developed, possessed of a four-chambered heart, and warm blood, breathing by lungs, and having some other characters.

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* See Jevons, *Elementary Lessons in Logic*, xxxii.

† Exception is taken to this particular division.

This matter, of prime interest to scientific men, is not so important to teachers; yet we may remember it with advantage.

Classification *enables us to think of things in groups.*

In this way the mind is relieved from much of the heavy pressure, which would be incident to remembering particulars. Such arrangement and association of Ideas enables us to command them more readily, and to recall them in suitable connection and order.*

The Predicables, or possible predicates, are *Genus*, *Species*, *Difference*, *Property*, *Accident*.

Genus and Species. When one class is contained in another, the containing class is the *Genus*, and the contained class the *Species*. *Man* is a species of the genus *animal*, *animal* a species of the genus *natural object*. (*The same term may be generic or specific, according to its use.*) The most inclusive genus is the *Summum Genus;* the lowest species, which cannot be divided except into individuals (not classes), is the *Infima Species*. Between these extremes may be an indefinite number of *Subaltern Genera*, each being a species of that above it, and a genus to the next, and to all others below it.

Difference (*Differentia*, *Characteristic*), consists in the additional attributes implied by the specific term, over and above those implied by the generic term. (*It is the difference in Intension between the Species and the Genus.*) Rain (*species*) is water-from-the-clouds (*genus*) falling-in-drops (*differentia*).

Property (*Proprium*) is any quality pertaining to a class, and to no other, but not necessary to mark off that class from all other classes. *Polarity* is a property of the magnet; *having three angles* a property of triangles.

Accident (*Accidens*), is a quality which happens to belong to a class, or to some of the members of the class, but which is non-essential to our Notion of the class, or which might be absent without affecting the other attributes pertaining to the class; such as *black* crows, *red-haired* man.

The following illustrations of this, and of the two previous sections, are offered.

Genus	plane figure	water from the clouds	animal
Difference	three-sided	falling in drops	rational
Species	**Triangle**	**Rain**	**Man**
Property	having three angles	causing springs	risible
Accident	equilateral, right-angled, &c.	cold, heavy, scanty, &c.	tall, black, good, &c.

* See Jevons, *Elementary Lessons in Logic*, xxxii.

Summum Genus	1	*Plants*				
Subaltern Genera	2	*Phænogams* (with flowers)		Cryptogams		
	3	*Dicotyledons*	two-lobed seed. tap root. wood, central pith, concentric rings (*Exogens*), separable bark. flowers in parts, 2's, 4's, or 5's (usually). leaves net-veined, edges cut (usually).	Monocotyledons	Acotyledons	
	4	*Thalamifloræ*	calyx and carolla (mostly). calyx mostly free, or not adherent to ovary. distinct, separable petals. hypogynous petals.	Calycifloræ	Corollifloræ	Monochlamyd[illegible]
	5	*Ranunculaceæ*	all parts distinct. other characters too.	Magnoliaceæ	Papaveraceæ	&c.
Infima Species	6	*Clematideæ*	peculiarities in habit. form of flower. fruit.	Helleboreæ	Anemoneæ	&c.

N.B.—The Terms occurring on the same line as collateral divisions of the same Generic Term are *Cognate* or *Co-ordinate Species*.

A Proposition is a judgment expressed in words.

It consists of two terms (termini, boundaries), a subject, and a predicate, united by a copula. The verb must be in the indicative mood, but the sentence may be affirmative or negative.

The Subject is the term about which the affirmation or negation is made.

The Predicate is the term [predicated, *i.e.*], affirmed or denied of the subject.

The Copula is the nexus, or connecting verb between the subject and predicate. Strictly speaking, the copula in Logic, is limited to the present tense of the verb *to be*, with or without the negative particle *not*.

Kinds of Propositions. Different principles of Classification are adopted. The two most important are:—

(1) According to **Quality**, into *Affirmative* and *Negative*.

(2) According to **Quantity**, into *Universal* and *Particular*.

By combining these, we obtain A, E, I, and O propositions.

A. *Universal Affirmative.* All fishes are animals. Gold is a metal.

E. *Universal Negative.* No metals are (chemical) compounds. Coal-gas is not an elementary substance.

I. *Particular Affirmative.* Some diseases are curable. (Some) Books are profitable companions.

O. *Particular Negative.* Some diseases are not curable. (Some) Books are not useful.

Distribution of Terms. A Term is *distributed* when it applies to all the individuals denoted by the Term or Name.

Universal Propositions (A, E) *distribute the Subject;* the predicate is affirmed or denied of *all* the individuals denoted by the subject; we may suppose *all* or *every*, or *no*, or *none* to be put before the subject.

Negative Propositions (E, O) *distribute the Predicate;* every individual or quality denoted by the predicate, is denied of, or excluded from the subject.

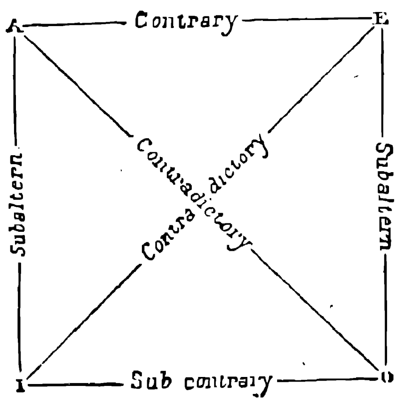
Some Propositions are *indefinite;* the *meaning* and not the *form* of the expression must inform us whether the terms are to be taken as distributed or no. "Books are useful companions," "Animals are not rational," *look* like A and E Propositions, but their *meaning* shows them to be particular (I and O) rather than universal.

Opposition. Two Propositions are *opposed*, when, having the same subject and predicate, they differ in *quality*, or in *quantity*, or in *both*.

The terms **Opposite, Contrary, Contradictory, Converse,** have a definite meaning in Logic, though they are often loosely used in ordinary.

Logicians use a table to explain the *four kinds of Opposition.*

(1) *Contrary*	A	All men are mortal.
	E	No men are mortal.
(2) *Subcontrary*	I	Some men are mortal.
	O	Some men are not mortal.
(3) *Contradictory*	A	All men are mortal.
	O	Some men are not mortal.
	E	No men are mortal.
	I	Some men are mortal.
(4) *Subaltern*	A	All men are mortal.
	I	Some men are mortal.
	E	No men are mortal.
	O	Some men are not mortal.



Contrary Propositions differ in	*quality*	Both may be false, only one can be true.
Subcontrary ,, ,,	*quality*	Both may be true; only one can be false.
Contradictory ,, ,,	*quality* & *quantity*	One must be true, the other false.
Subaltern ,, ,,	*quantity*	The particular (I or O) is true, if the corresponding universal (A or E) be true. But the universal may or may not be true, when its r is true

Conversion of Propositions is a form of immediate inference.

To convert a Proposition is to *transpose its subject and predicate*, without altering its *quality*, and without distributing any term in the **converse**, which was not distributed in the **convertend.**

I and E Propositions may be converted *simply*, by transposing the subject and predicate; for neither Term is distributed in I, and both in E.

I (*Convertend*) Some triangles are equilateral. (*Converse*) Some equilateral figures are triangles.

E (*Convertend*) No man is perfect. (*Converse*) No perfect being is a man.

An A Proposition is converted by *limitation*, or *per accidens*. It is first *limited* to I, and then converted *simply*. Thus "All men are mortal" is limited to I, "Some men are mortal," and then simply converted into "Some mortal beings are men." We may not convert an A Proposition without limiting it; we may not from "All men are mortal," say "All mortal beings are men."

The conversion of an O Proposition is more complicated.

Propositions are also *Simple* or *Complex*.

In **Simple** *Propositions*, one Predicate is affirmed or denied of one Subject (M is N—X is not Y).

A **Complex** *Proposition* has more than one Subject, or more than one Predicate, or both.

Among *Complex Propositions* are :—

(1) *Disjunctive Propositions*, when the Simple Propositions, forming the Complex Proposition, are connected by "*or*." (Either M is N, or X is Y.)

(2) *Conditional Propositions*, when the Simple Propositions forming the Complex Proposition. are connected by "*if*." (If M is N, then C is D. C is D if M is N.)

Both *Disjunctive* and *Conditional* Propositions are termed *Hypothetical.*

Categorical Propositions are *unconditional*; the statement is direct, and not dependent. (M is N. M is not N.)

Analysis and Synthesis. Analysis is separating a complex whole into its constituent parts. **Synthesis** consists in combining the parts into a whole.

Like many other terms in Logic and in Mental Science, these are employed

in many senses. We shall notice *Material* and *Logical* **Analysis and Synthesis.**

Analysis begins with complex substances, or with complex Notions, and reduces them to more simple constituent substances or Notions. The process may be continued until the most elementary substances or Notions are reached.

Synthesis begins with the more (or with the most) elementary or simple substances or Notions, and combines them into various aggregates, proceeding from the relatively simple to the relatively complex.

Gunpowder is made by mixing intimately certain proportions of sulphur, charcoal, and saltpetre; the manufacture of gunpowder is a process of *Material Synthesis*. The constituents could be separated by *Material Analysis*; the saltpetre could be dissolved out by water, and the sulphur separated from the charcoal, say with carbon-disulphide.

Logical Analysis takes a complex Idea or Notion (represented by a Term of comparatively deep or great Intension), and separates it into Ideas which are more simple, or abstract (represented by Terms of narrower Connotation). *Logical Synthesis* begins with comparatively simple Ideas, and adds Idea to Idea, increasing the complexity of the Notion at each stage.

(1) Being - - - -	Existent thing.
(2) Existent thing, + production by natural causes - - -	Natural object.
(3) Natural object + life - -	Living thing.
(4) Living thing + sensation, &c. -	Animal.
(5) Animal + backbone, &c. - -	Vertebrate.
(6) Vertebrate + suckling young, &c.	Mammal.

To proceed from (1) to (6), adding to the Notion at each stage is *Synthesis*. To begin with *Mammal*, and pass back to *being* by successive *Abstractions* is *Analysis*.

Reasoning, Inference, is "the progress of the Mind from one or more given Propositions (*Premisses*) to a Proposition (*Conclusion*) different from [that, or from] those given."*

"Whenever we assert a Proposition in consequence of one or more Propositions,—the combination of Propositions may be regarded as an inference."†

* See Jevons, *Elementary Lessons in Logic*, p. 85.

† Fowler, *Logic*, p. 68.

Exs. (*a*) "All men are mortal"; therefore, "Some men are mortal"; "Some mortal beings are men"; and so with other cases of **Immediate** *Inference*, from Opposition and Conversion of Propositions.

$$(b)\left\{\begin{array}{lcccl} (1)\left\{\begin{array}{c}\text{Tyrants}\\ (\textit{Middle Term})\end{array}\right\} & \text{are} & \left\{\begin{array}{c}\text{deserving of death}\\ (\textit{Major Term}).\end{array}\right\} & (1)\ \textit{Major} & \multirow{2}{*}{$\left.\right\}$ \textit{Premiss.}} \\ (2)\left\{\begin{array}{c}\text{Nero}\\ (\textit{Minor Term})\end{array}\right\} & \text{was} & \left\{\begin{array}{c}\text{a tyrant}\\ (\textit{Middle Term}).\end{array}\right\} & (2)\ \textit{Minor} & \\ (3)\left\{\begin{array}{c}\textit{Therefore}, \text{Nero}\\ (\textit{Minor Term})\end{array}\right\} & \text{was} & \left\{\begin{array}{c}\text{deserving of death}\\ (\textit{Major Term}).\end{array}\right\} & (3)\ \textit{Conclusion.} & \end{array}\right.$$

In this case there are two Propositions or *Premisses*, from which a *Conclusion* is inferred. In each Premiss, one term of the Conclusion is compared with a Common, Mediate, or *Middle Term*. Such Inferences are **Mediate.**

Two such Propositions, with a Conclusion, make a **Syllogism.** Syllogisms have different "*Figures*," according to the position of the Middle Term in the Premisses, and different "*Modes*" or "*Moods*," according to the quality, quantity, and relation of the Propositions entering into the Syllogism.

Note, that Inference in itself does not depend on the truth or falsity of the Premisses; in Reasoning, *the Conclusion follows from the Premisses;* the truth or reliability of the Premisses should be acquiesced in, before any Inference is made from them. Yet, where a Conclusion is manifestly wrong, it points to something wrong in the Premisses, as in the *reductio ad absurdum* employed so frequently in Euclid, III., and elsewhere.

Reasoning is either *Inductive* or *Deductive.*

(1) **Induction** is "the operation of discovering and proving general Propositions."*

Induction is an *Inference*, from *particular* facts or individual cases, to a *general Conclusion or Proposition;* the Conclusion is wider, or more general than the Premisses.

Exs. (*a*) I may infer inductively, that *all lode-stones attract iron*, from observing that separate lode-stones, A, B, C, attract iron.

Notice here the implied "*fundamental axiom of Induction,*" which is thus expressed by Mill,—"The course of Nature is uniform," and again, "Whenever similar circumstances are repeated, they will be followed by the same results."

Notice also, that Inductive Generalization from insufficient examples is likely to be erroneous; this is the commonest form of vicious In-

* Mill. *Logic*. viii., ch. i.

ductive Inference in practical life. *We are not warranted in accepting a statement as universally true, because we have known no instance to the contrary, unless we are sure we should have known of any exceptions or contrary instances, if they had occurred, or could occur.* The little child's Induction "*All people are kind,*" because its mother, father, and other people it has met, have been kind, owes its weakness to limited experience. "*Heat expands all bodies,*" looks like a true and useful general statement; it holds also in the great majority of cases, but it breaks down in a few, such as caoutchouc, and water between 0° and 4° C.

(*b*) If the student of chemistry, by a "flash of insight," notices that Hydrogen enters into the composition of all the acids he has yet dealt with, and therefore infers that *H. is present in all acids*, he reasons inductively.

For sound Induction we must (*a*) *Collect facts*, examples, particulars, in sufficient number, making sure that they *are* facts, observing carefully, looking out for exceptions, and testing as far as is needed. (*b*) *Collate and examine* the facts. (*c*) After *Analysis*, and various forms or directions of *Abstraction* and *Classification*, a "skilful guess" comes sooner or later to capable minds, which embodies the fundamental agreement or law underlying the similarities. (*d*) *Formulate the law, i.e.*, express it in words. (*e*) *Test or verify the law* by applying it deductively to other cases, and modify (or abandon) it, as may be necessary.

Inductive Generalizations then serve as compact and inclusive summaries of all the smaller facts and statements on which the Generalization was based. The general statement also is easily remembered, not only on account of its brevity, but because of the bond of intelligent Association set up between it and its bases.

Note, that Induction, carried to the highest point, leads to *Principles*, which are the most general of all Propositions, and which cannot be demonstrated, although the Mind acquiesces in them.

Induction has some resemblance to *Abstraction*.

Both commence with individuals, and proceed to what is more general. But *Abstraction* is mainly an instrument of Classification, relating to the formation and arrangement of Concepts, and the adaptation of words to express them. *Induction* is an instrument for discovering laws and principles previously unknown.*

* See notes to Aldrich, *Logic*.

Writers sometimes speak of different kinds of Induction, though they are essentially the same.

Moral Induction is based on observation of the conduct, motives, and character of men, the influence of education, &c. The results are proverbs, moral and political axioms, and general rules for conduct.

Metaphysical Induction is based on introspection, observation, and study of what others have written. The results are generalizations respecting the nature and operations of Mind, very hard to reach, but of extreme value to teachers when reliable.

Physical Induction depends on the right use of *Observation* and *Experiment* directed to natural objects. It aims at discovering and establishing *Laws of Nature.* * †

Analogy is "not an identity of one thing with another, but an identity of relations" (similarity). But usually it has come to mean any resemblance between things, which enables us to believe of one what we know of another.

Reasoning from Analogy is a form of imperfect Induction, never producing absolute certainty, but being regarded as safe according to *closeness of resemblance, slightness of difference,* and the *fulness of our knowledge.* Thus, from the similarity between the Earth and Mars, we might argue, by analogy, that Mars is inhabited; from the similarity between the earth and the moon we might argue that the latter is inhabited, or, from their dissimilarity, that it is not inhabited.

Analogy is always suggestive. It is usually tempting also, but many mistakes are traceable to *False Analogy.*

Example, Instance, lies in using *one thing* of a class, to point out properties belonging to the *class.*

Example differs from *Induction* chiefly in two respects. (1) The *antecedent* in Induction consists of *several* singular facts; Example requires but *one.* (2) The *consequent* in Induction is *universal,* in Example it is *particular.*

Note, that Analogy, Simile, Example, are *Illustrations and not Proofs,* though they are often accepted for Proofs.*

(2) Deduction. When a general statement is accepted as

* See notes to Aldrich, *Logic.*

† See chaps. viii. and ix. Mill, *Logic.* The whole of Books III. and IV. is taken up more or less directly with Induction.

true, its application to new cases is *Deduction.* In this case, we reason from the whole to the parts; the conclusion is narrower, or less general, or more particular than the Premisses.

The fundamental principle in Deduction is "*What is true of a class, is true of each and every individual contained in that class.*"

Exs. (*a*) The *Syllogism* is typical of Deductive Reasoning.

All-animals-which-suckle-their-young | are | mammals (*Major Premiss*).
Whales | are | animals-which-suckle-their-young - (*Minor Premiss*).
(Therefore) Whales | are | mammals - - (*Conclusion*).

(*b*) Whenever we *reason from expressed or implied Major and Minor Premisses to a Conclusion*, we so far proceed Deductively.

This goes on constantly. One Premiss, however, usually escapes notice, unless attention be called to the omission. Most of our Conclusions are made, in practice, without formal or really conscious reference to Premisses. If, however, we are asked for our *reasons*, we fall back on the Premisses, and cite them. In fact, the Conclusion often rises first in the Mind, and the Premisses after. Premisses coming after conclusions are called Reasons.*

(*c*) *Whole chains of Deductive Reasoning* are formed by using a Conclusion at which we have arrived as one Premiss, adding another, proceeding to a further Conclusion, and continuing the process. "Caius is a man. All men are finite beings. All finite beings are sentient. All sentient beings seek happiness. (Therefore) Caius seeks happiness."† Similar cases, less formally stated, occur commonly in Euclid's Geometry. (Such a chain is called a "*Sorites*.")

Kinds of Syllogisms. (*a*) *Simple or* Categorical, when Premisses and Conclusion are Simple.

A is B.
B is C.
(Therefore) A is C.

(*b*) *Complex or* **Hypothetical**, when one or more of the Premisses, or the Conclusion is Complex.

(1) *Conjunctive or Conditional Syll.* If A is B, then C is D.
But A is B.
(Therefore) C is D.

(2) *Disjunctive Syllogisms.* Either A is B, or C is D.
But A is not B.
(Therefore) C is D.

* Whately, *Logic.*
† See Thomson, *Laws of Thought*, sect. 108.

N.B. The *Dilemma* is a form of Hypothetical Syllogism, with one (complex) Premiss *Conjunctive*, the other *Disjunctive*.

If A is B, or C is D,—then X is Y.
But either A is B or C is D.
(Therefore) X is Y.

Syllogisms have (1) "**Figures**" and (2) "**Moods**," according (1) to the *position of the Middle Term* in the Premisses, and (2) according to the *quality and quantity of the Premisses and Conclusion.*

By "**Reduction**" of Syllogisms is meant bringing them from Moods in the 2nd, 3rd, or 4th Figures, to corresponding Moods in the 1st Figure.

It is in connection with Moods, Figures, and Reduction, that the series of remarkable mnemonic words, quoted below, is employed as a *memoria technica*:

*Barbara, Celarent, Darii, Ferio*que, prioris;
Cesare, Camestres, Festino, Baroko, secundæ;
Tertia, *Darapti, Diramis, Datisi, Felapton,*
Bokardo, Ferison, habet; Quarta insuper addit
Bramantip, Camenes, Dimaris, Fesapo, Fresison.
(See Aldrich, Fowler, Jevons, &c.)

The initial letters, the vowels, and certain consonants have a meaning, and convey directions to the student.

Fallacies are intellectual causes of error; they tend to deceive the thinker, and those to whom he communicates them. The Reasoning in them bears the semblance of truth, whilst it is really faulty. Fallacies are extremely common.

Book V. Mill's *Logic*, and Lessons xx. and xxi. Jevons' *Ely. Logic*, deal fully with this subject. Advanced students would profit by making out tables of Fallacies on both systems. Almost every writer makes an arrangement of his own.

Dealing with Errors in Reasoning.

(*a*) *Assail a Premiss* by an instance to the contrary.

(*b*) Perhaps one may *dissolve the argument* on account of some logical defect; "as where a universal is proved from [only] a few particulars."*

(*c*) *Prove the Contradictory of the Conclusion* by an unassailable argu-

* See Thomson, *Laws of Thought*, sect. 129.

ment of our own, after temporarily admitting the apparent correctness of the opposing argument.

(*d*) *Defend one's own argument by Indirect Demonstration*, by "reduction to impossibility," *i.e.*, by showing that something impossible or absurd follows from contradicting our conclusion.*

An **Hypothesis** is a *supposition* which we make (either without actual evidence, or upon evidence avowedly insufficient) that we may deduce from it conclusions in accordance with actual facts, which are known to be real, or that we may account for, or explain, or harmonize these facts.† ‡

Thus, attempts have been made to explain observed facts respecting magnets, by the hypothesis (1) of a single magnetic fluid, (2) of two co-existent magnetic fluids, and (3) of electric currents circulating round the particles of bodies. Other examples are abundant.

The use of the Term in Geometrical proof is well known.

"If the conclusions to which the Hypothesis leads are known truths, the hypothesis itself either must be, or is at least likely to be true."†

Theory is often used as equivalent to *Hypothesis* (as in "*Atomic Theory*"). At other times, it is opposed to *Practice*. Sometimes also it stands for a *general Law;* the "Atomic Theory" has this dignity in point of fact.

Fact has different meanings also. It stands for *what is known and certain*, as opposed to what is probable only, and for what is *true* as opposed to false. It is also used in reference to a *special case*, or *single case*, as contrasted with a general law.

A **Law** is a rule, established and permanent.

This term is of very wide and varied application, and is difficult to define.

Laws of Nature are uniformities, the fewest in number, and simplest in kind, "which, being granted, the whole existing order of Nature would result." *Ultimate Laws*, of this kind, cannot be explained by analyzing, or reducing them to more general laws; *Derivative Laws* can be so explained. *Empirical Laws* are uniformities "which observation has shown to exist, but on which [one] hesitates to rely, for want of seeing any reason *why* such a law should exist."§

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* See Thompson, *Laws of Thought*, sect. 129.

† See Mill, *Logic*, B. III., chapter xiv.

‡ See Jevons, *Elementary Lessons in Logic*, Less. xxxi.

§ See Mill, *Logic*, B. III., ch. iv.

Cause. The circumstances which must have preceded an event in order that the event should happen.*

Usually many different things, conditions, or circumstances, collectively constitute a *Cause*. The last apparent cause or *occasion* of the event is popularly considered as *the* Cause.

Explanation (of a Fact, or of Law) is making it clear, by referring it to its Cause.

One Fact may be explained by another (as the production of large waves by volcanic disturbance). Or a Fact may be referred to a Law (as the loosening of fragments of a cliff, consequent on the expansion of water by frost ; or the regular expansion of a gas under the application of heat, in accordance with the law of Boyle and Mariotte). A Law also is explained, when it is shown to result from, or to be a case of, a wider Law. (Thus, the "Law of Falling Bodies" is explained by referring it to the general Law of Gravitation.)†

Demonstration, or Proof, is the process of showing by Reasoning, that a Proposition is strictly deducible from certain acknowledged Premisses.

It produces clear Perception of, and full acquiescence in, what is demonstrated. Propositions in Mathematics, Syllogisms, and Chains of Reasoning (Sorites) are demonstrated on this principle.

Belief (or Opinion) is founded on probability. What is *really probable* bears a greater resemblance to truth than its contradictory does. What is *relatively or apparently probable* appears to resemble truth.

There are many degrees of probability. A corresponding variety exists in the strength of the opinion or Belief produced by them ; we may pass from *possible*, *doubtful*, through may grades to *morally certain*. All these degrees have, however, been resolved into three. (1) *Opinion*, where the holder cannot give adequate grounds (proof) for what he maintains, nor does he hold it with absolute certainty himself. (2) *Belief*, indicates what we are fully persuaded of ourselves, but which we cannot prove to others, so as to compel them to accept

* See Jevons, *Elementary Lessons in Logic*.
† *Ibid.*, Less. xxxi.

it. (3) *Scientific Belief*, demonstrable to ourselves and to others.* The grounds on which Belief and Opinion rest are (*a*) *Direct Observation and Experience*; (*b*) *Indirect Testimony*, the trustworthiness of the attestor being assured.

* See Thomson, *Laws of Thought*, sect. 120.